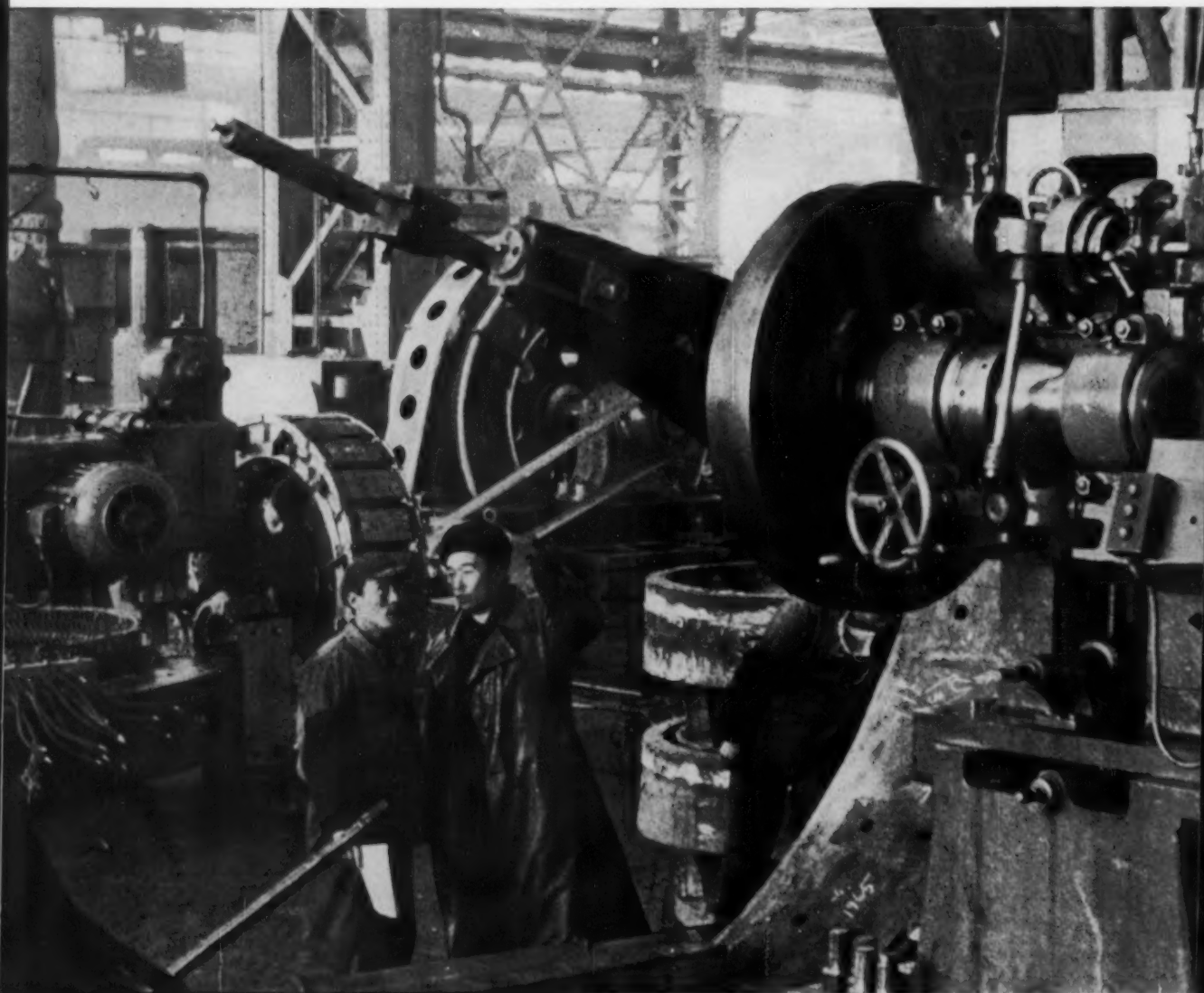


The IRON AGE

August 7, 1958

A Chilton Publication

The National Metalworking Weekly



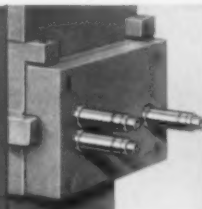
Red China
Pushes Industrial
Buildup P. 41

Tips on Cutting
Production Costs —P. 75
Competition Checks
Tool and Die Prices —P. 114
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- ① New Micro Spindles are as small as 3/4" dia.
...Precision Bore holes as small as 1/16"

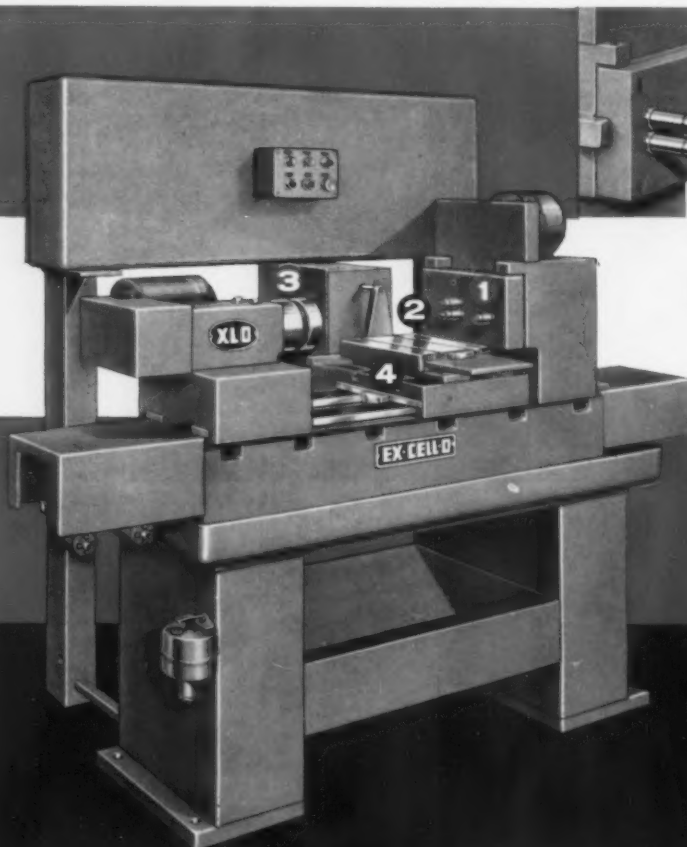


- ② Bores multiple holes at close center distances



- ③ Small conventional spindles can be used

- ④ A cross slide is available for grooving, feed facing, or indexing



NEW!

58-41

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New Ex-Cell-O Machines designed for production boring, turning, grooving, recessing, facing, counterboring and chamfering of instruments, missile parts, other precision applications.

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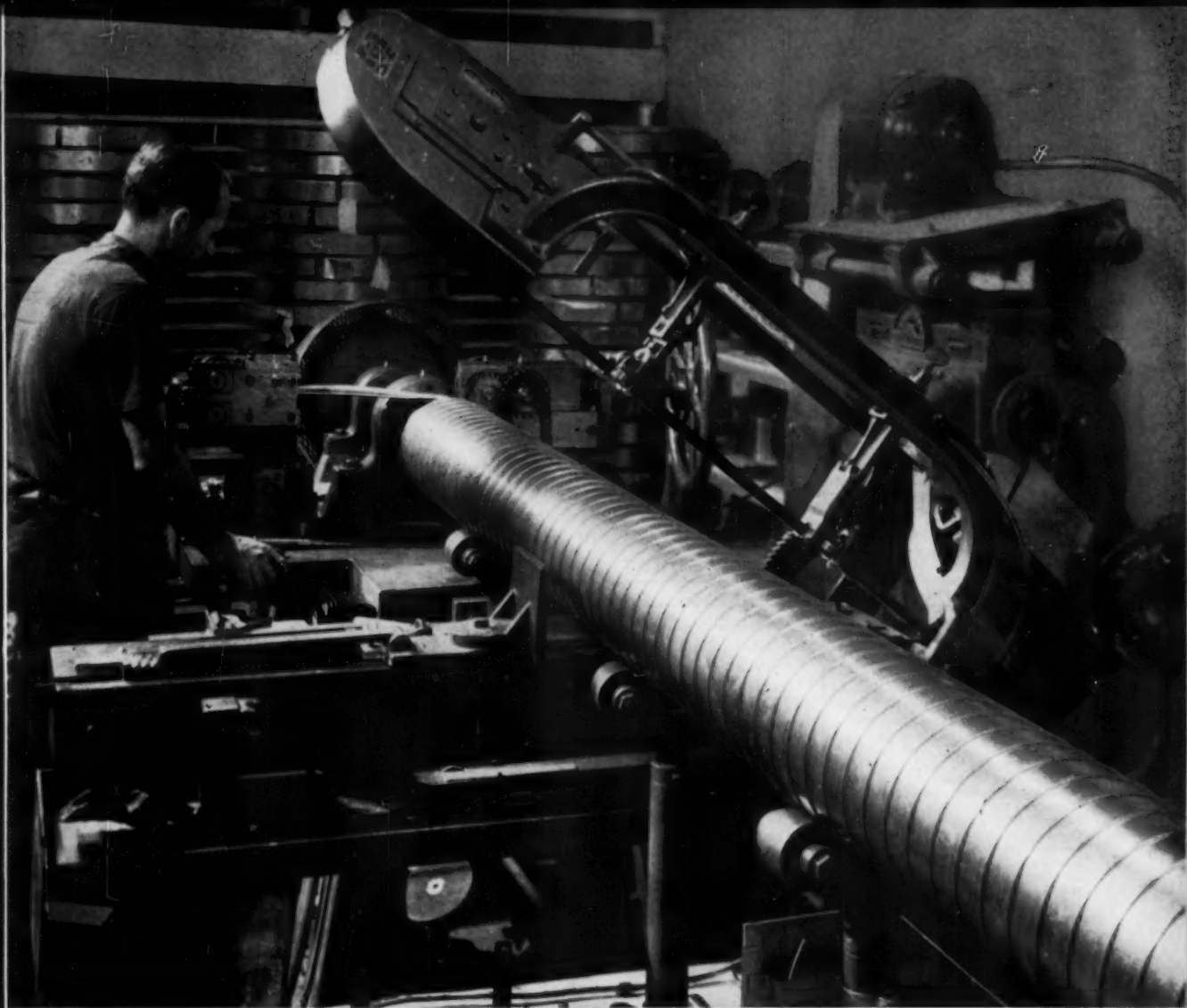
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The IRON AGE

August 7, 1958—Vol. 182, No. 6

Digest of the Week in

*Starred items are digested at right.

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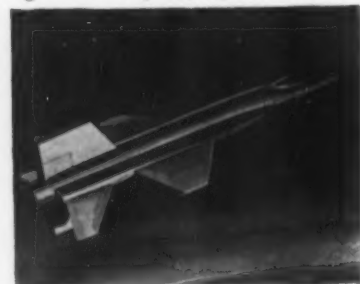
NEWS ARTICLES

THE STEEL PRICE RISE

It's Here to Stay—Despite the hue and cry of politicians, the steel price rise will stick. The average increase of about \$4.50 a ton is less than half what steel firms say is needed to offset the rise in employment costs. P. 44

JETS AND STAINLESS

Getting Together—Aircraft designers are specifying more stain-



less steels for new military jets. Strength at high temperatures, weldability, and fabricating advantages are a few reasons why. P. 46

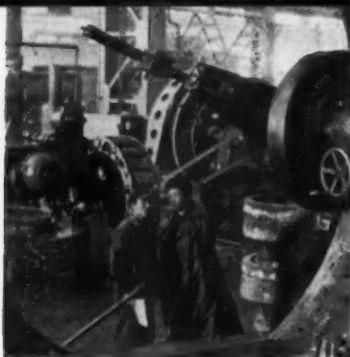
AUTO LABOR

Time for Decision—Auto labor stalemate is approaching the end. Workers are willing to strike. But they also would agree to more mild terms than those mentioned by union leaders. Time is running out as new models approach. P. 48

DEFENSE SPENDING

Funds Adequate—Defense Dept. offers a new twist. Brass says it has

Metalworking



enough funds budgeted to meet present demands. Spending isn't likely to be stepped up. P. 61

TAX REFORM URGED

Economist Says Tax Laws Aid Reds — MAPI's Terborgh claims our tax depreciation laws are handicapping U. S. industry in race with Russia. P. 65

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PRODUCTION COSTS

Cut with Better Methods—The big question is not how to improve methods but which are the best ones to work on. It takes operations analysis and a study of potential profit to make positive decisions. This special report gives a blueprint for action. P. 75

GEAR CUTTING

Unit Broaches Sectors—A new installation is cutting teeth on a gear segment of a sector shaft, part of an automotive steering gear assembly. Circular cutters with progressively increasing teeth give broaching action for forming gear tooth length. P. 78

MACHINING BOTTLENECKS

How to Break Them—The first place to look for potential bottlenecks is in the part itself. From there, tooling should be simple and practical. Logical machining sequences help. And naturally having

the right equipment for the job plays a big part. P. 80

STAINLESS TUBING

Anneal for Corrosive Use—Use a stainless product without welding or forming steps and you can be sure of its properties. But once you subject stainless to welding and cold forming it pays to check on anti-corrosive properties. P. 83

SLOTTED ANGLES

Find Many Uses — A durable industrial framing material is solving many different maintenance and storage problems. It's a cold rolled slotted steel angle iron that can be cut on the job and assembled without special tools. P. 86

MARKETS & PRICES

NEW BUILDING BOOM

It's Under Way—Latest Dodge reports show that construction hit a new all-time monthly peak in June. Leading the field are public utilities, public works, housing. But industrial building lags. P. 47

NEXT WEEK

BUILDING BLOCK TOOLS

Tensions Mount — Efforts to standardize machine tools has caused much controversy among builders and users. Next Week's special feature will contain an objective industry-wide report on building block automation.

INDUSTRIAL CHINA: With the help of the Soviet Union, Red China is making great strides in becoming an industrial nation. The goal now is to pass Great Britain in many segments of industry in a series of 5-year plans. P. 41

AUTO MUFFLERS

Coated in '59—Automakers say additives in high octane gas cut muffler life. They believe the answer is to coat the steel. Aluminized is considered best. But short supply means zinc will also be used. P. 56

AIRCRAFT INDUSTRY

Will Grow Smaller—With swing to missile building, space and manpower needs of the aircraft industry will dwindle. But conventional aircraft will remain in heavy demand for next few years. P. 63

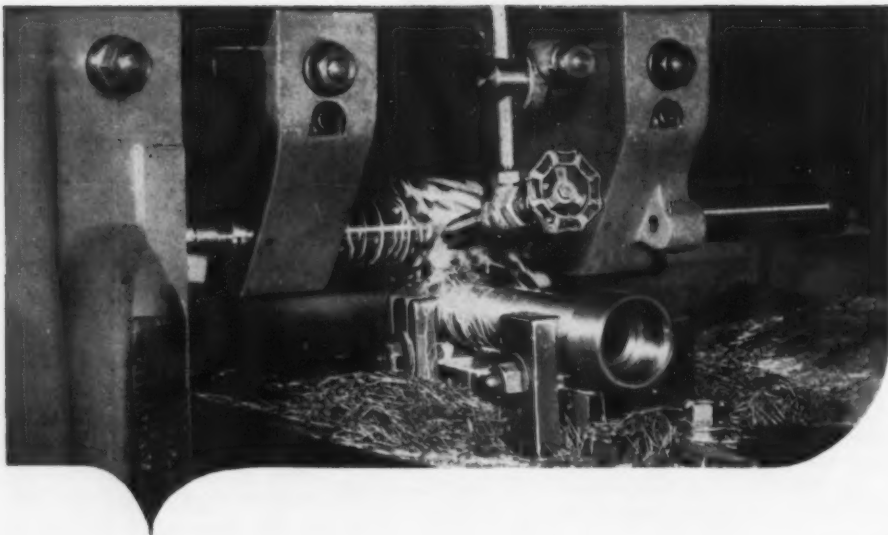
WHY STEEL PRICES ROSE

The Boost Was Inevitable—The steel price boost had to come. Steel firms were saddled with top-heavy wage costs. Some of them were operating in the red. P. 113

TOOL AND DIE PRICES

Increases Probable — Tool and die makers are not anxious to raise prices with their market highly competitive. But rising costs may make the move necessary. P. 114





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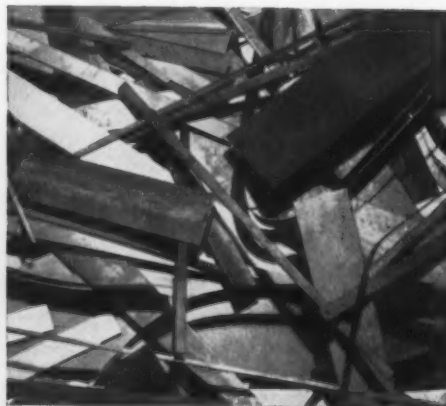
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The Steel Price Rise: Misconceptions Are Many!

The steel price rise is a fact. But a lot of talk, reports, and rumors about it are far from the facts. It is charitable to call the backwash misconceptions.

This is no alibi or excuse for the steel industry. Steel firms made the price increases for reasons they thought were sound and businesslike.

They also studied the situation to death with the result that hikes were less than had been expected and came later than had been expected. That cost all steel firms a lot of money. And it puts the smaller companies in a tight squeeze.

Even some of the medium size firms are in a tight squeeze because of the size of the rise and the feet-dragging caused by the competitive situation.

The steel price rise was born in 1956 when the steel industry was clobbered with a fantastic wage bill following a five-week strike—and back door pressure from the Administration to settle.

Pressures from customers and the market place have combined to force steel firms to limit their rise to direct labor cost increases. This means some steel firms are going to have a tough

time meeting their plans for expansion, maintenance, and proper returns for their stockholders.

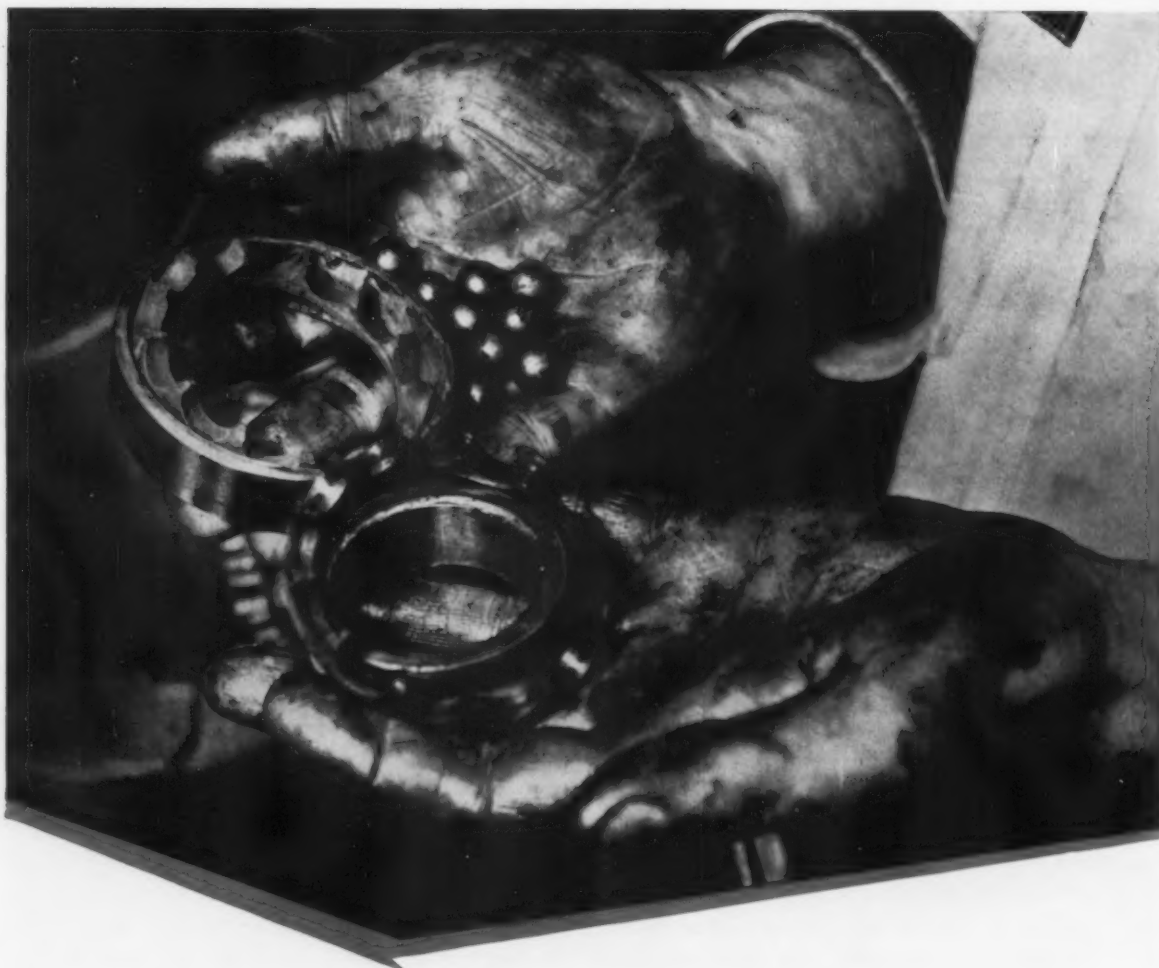
Had there been no wage increase in July there would have been no steel price increase last week. The President of the U. S. seems to be one of the few in Washington who knows this. Sen. Kefauver is a good politician. But he appears a little hazy on steel industry problems and on labor's power. He seems to be more interested in personal publicity than in labeling the unions as more responsible for the steel price increases than are the steel firms themselves.

Then, too, there are the sideliners who argue that the way to run a business is to see what Washington thinks about it. It's about time we let Washington take care of its own troubles. If Congress wants to make an investigation, let it be made—but let it not be preceded by press conference threats and pressures not based on facts or common sense.

And another thing: Why always pick on the steel industry for running its business in a manner it thinks is fair and honest?

Tom Campbell

Editor-in-Chief



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LETTERS FROM READERS

Committee Work

Sir—May we please have two copies of Mr. D. W. Blend's article on "How to Work With Committees"? It is the best of its kind we have ever seen and ought to go a long way toward electing Mr. Blend president of the "Society for the Elimination of Useless, Unnecessary and Ineffectual Committees." — H. D. McKinnon, Exec. Vice-Pres., Sheet Aluminum Corp., Jackson, Mich.

Sir—About Mr. Blend's comprehensive article: I like the idea of preparing an agenda in advance so that committee members have an opportunity to do some research beforehand and really bring some interesting information to the meeting.

Kindly send me a reprint of this article.—P. H. Vido, U. S. Electrical Motors Inc., Los Angeles, Calif.

Auto Glass

Sir—In the automotive section of your July 10 issue appeared a very interesting article on "More Glass Coming for New Cars" by H. R. Neal. As the Pittsburgh Plate Glass

Co. is mentioned by name, we request a correction of the statement "Libbey-Owens-Ford favors laminated glass; Pittsburgh Plate Glass favors tempered glass."

We cannot speak for Libbey-Owens-Ford but we can definitely and categorically state that at no time has Pittsburgh Plate indicated a preference for tempered glass any more than for laminated glass. As a matter of record, the Pittsburgh Plate Glass Co. has played a leading part in the development of the type of laminated glass now universally in use.

As your article states, both major manufacturers supply both types of glass and we are delighted to furnish either type depending upon the engineering specifications of the purchasing company.—M. W. Mar-

shall, Director Automotive Sales, Glass Division, Pittsburgh Plate Glass Co., Pittsburgh.

Profit Building

Sir—Please send me a copy of your article, "How to Plan for Higher Profit Margins."

I am also interested in the comments of Mr. Harold K. Howe in an article on power lawn mowers which was also in a recent issue. The article gave Mr. Howe's title as Director of the Lawn Mower Institute and if I could get the institute's address I would like to inquire further into this field.

I find your magazine a tremendous aid in keeping up with the business world. — L. A. Noxon, Royal Oak, Mich.



"It's always a problem what to do with the left-overs."



There's a Satisfied Customer back of most orders for Diamond Perforated Metals

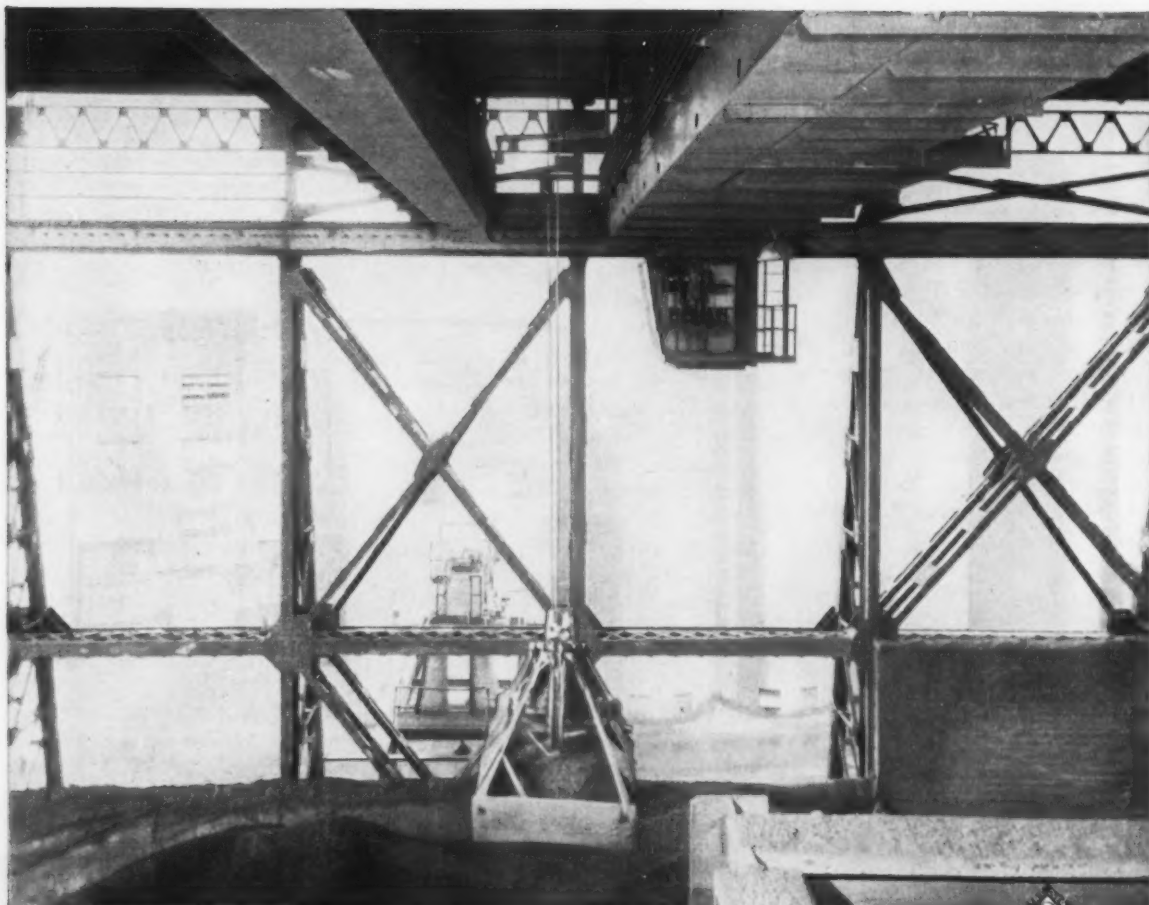
Naturally, we're always glad to make new friends and open up new accounts but, more and more as time goes on, the greater part of our business comes from concerns that have dealt with us before—some of them for nearly half a century.

One Reason is because they have learned that Diamond Perforated Metal Products are always reliable and our charges in line with competition of comparable quality. Another Reason is because our facilities are so complete, and our stock of dies so extensive, that almost any demand for perforated metal sheets, plates or parts can be taken care of promptly, accurately and economically.

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FATIGUE CRACKS

Fog Index

No one ever has time to read all the things he should. You are no exception, and we know it.

Our editors are constantly trying to make The IRON AGE easier and faster to read. You might like to hear about their latest move in this direction: The Chilton Readability Program.

Here at Chilton we are one of a family of 16 industrial, merchandising, and professional magazines. The IRON AGE has long been a disciple of Dr. Rudolf Flesch ("The Art of Plain Talk," "The Art of Readable Writing." His books have been required reading for all the staff. A few years ago Chilton editors retained Robert Gunning Associates to organize a company-wide drive for easier-reading copy.

Mr. Gunning studied several issues of each Chilton magazine once a year and rated their readability with his "fog index" formula. Then he talked to all editors, explained how articles could be de-fogged with simple, active language.

Example:

Consumer elements are continuing to stress the fundamental necessity of a stabilization of the price structure at a lower level than that currently prevailing.

De-fogged, it reads:

Consumers keep saying prices must go down and stay down.

Now you'll note that our masthead (p. 2) lists Mr. Gunning in a new role: Readability consultant. Which means he will be working regularly with the editors to make your IRON AGE read easier and faster. His work will be tied in with a new Chilton research program which will check reader traffic studies against fog index ratings. Or, in simple language, we'll find out the relationship between the reading-ease of a story and the number of people who actually read it.

Slowdown Lowdown

Speaking of words that need de-fogging, we have the following example of semantic double-talk. Originally appearing in the Chicago Tribune it's a take-off on economic jargon:

"It should be noted that a slowing up of the slowdown is not as good as an upturn in the down curve, but it is a good deal better than either a speedup of the slowdown or a deepening of the down curve.

"For the steel industry, it appears that the past buildup in customers' input has caused the present drop-off in steel output, which is to say that because customers did not put in more, the steel producers put out less. This, of course, caused a short-term descent in the long-term ascent.

"But the indicators suggest rather a leveling off, referred to on Wall Street as bumping along rock bottom. This will be followed by a gentle pickup, then a faster pickup, a slowdown of the pickup, and finally a leveling off again."

Important Chaff

Aluminum chaff is a valuable material in today's world. In a previous IRON AGE story we pointed out how it can be released into the air to confuse radar posts trying to get a fix on approaching aircraft.

Now the Aluminum Bulletin points out another important service of chaff. Scientists at the U. S. Army Signal Engineering Laboratory, Fort Monmouth, N. J., use it as a weather indicator. Small rockets carry the aluminum particles as high as 54 miles up and release them.

Ground radar tracks them and records the effect of wind direction and velocity. This shows what's happening in the high altitude "jet stream" and provides data useful in firing larger missiles.

Atlas

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Wooden tanks, because of their inherent instability, create a continuous maintenance and replacement problem. Atlas construction uses corrosion-resistant linings and acid brick joined with the proper corrosion-proof cement to end maintenance problems and give a service life of 10 to 1 over wood. Atlas tanks provide positive corrosion protection.

As there is no drying out or change of dimensions, Atlas tanks will not leak. In addition, they are engineered to withstand hard physical abuse from shifting loads. They resist all pickling solutions even when used at today's elevated temperatures.

Atlas pickle tanks put an end to your costly replacement problems. Write for Atlas Bulletins 5-2 and C-1.

**ATLAS
MINERAL**
CORROSION COMPANY
MERTZTOWN, PENNSYLVANIA



Engineered by Tinnerman...

It's a fastener...It's a friction-lock...
It's a Tinnerman **SPEED NUT**® doing double-duty

Turn this Westinghouse Mobilaire® Fan to any angle...and it *stays* angled. The Tinnerman SPEED NUT Brand Fastener that holds the fan trunnions tight to the housing also supplies live spring-tension to keep the fan positioned at any angle you choose.

These SPEED NUT fasteners, developed by joint efforts of Tinnerman and Westinghouse designers, eliminate special adjusting thumb-screws. Only 2 SPEED NUT parts serve the purpose of several stampings and ordinary fasteners. Material and assembly costs are lower than with ordinary fastening methods. And the consumer gets a better fan that's easier to adjust.

Chances are that Tinnerman designers can develop SPEED NUT parts for your product to cut costs, speed production, improve that product.

Call your local SPEED NUT representative now...if he's not in your Yellow Pages Directory under "Fasteners", write to:

TINNERMAN PRODUCTS, INC.
Dept. 12 • P. O. Box 6688 • Cleveland 1, Ohio

TINNERMAN
Speed Nuts®



FASTEST THING IN FASTENINGS®

CANADA: Dominion Fasteners Ltd., Hamilton, Ontario. GREAT BRITAIN: Simmonds Aerocessories Ltd., Trofrest, Wales. FRANCE: Simmonds S.A., 3 rue Salomon de Rothschild, Suresnes (Seine). GERMANY: Mecano-Bandy GmbH, Heidelberg.

COMING EXHIBITS

Western Packaging & Materials Handling Show—Aug. 11-13, Civic Auditorium, San Francisco. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

Chemical Show—Sept. 9-12, International Amphitheater, Chicago. (National Chemical Exposition, 86 E. Randolph St., Chicago 1.)

Iron & Steel Show—Sept. 23-26, Cleveland Public Auditorium, Cleveland. (Association of Iron & Steel Engineers, 1010 Empire Bldg., Pittsburgh 22, Pa.)

Western Tool Show—Sept. 29-Oct. 3, Shrine Exposition Hall, Los Angeles. (American Society of Tool Engineers, 10700 Puritan Ave., Detroit 38.)

Packaging & Materials Handling Show—Oct. 14-16, Coliseum, Chicago. (SIPMHE, 327 LaSalle St., Chicago 4.)

Metals Show—Oct. 27-31, Public Auditorium, Cleveland. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

Plastics Show—Nov. 17-21, International Amphitheater, Chicago. (The Society of the Plastics Industry, Inc., 250 Park Ave., New York 17.)

MEETINGS

SEPTEMBER

National Petroleum Assn.—Annual meeting, Sept. 10-12, Hotel Traymore, Atlantic City, N. J. Society headquarters, Munsey Bldg., Rm. 958, Washington, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 22-23, The Homestead, Hot Springs, Va. Society headquarters, 606 Terminal Tower, Cleveland 13.

The Material Handling Institute, Inc.—Joint industry fall meetings—Sept. 22-24, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, Suite 759, One Gateway Center, Pittsburgh 22.

(Continued on P. 16)

... of Duraloy HH Alloy, one of the most widely used high chrome, medium nickel alloys.

Two items concerning these furnace rolls may be of particular interest:

a—the size: 20 feet long—14" OD, 3/4" wall thickness

b—welding operations by which reducing cones and shafts (both statically cast of the same alloy) were welded to the centrifugally cast rolls

These two items will serve to emphasize two phases of our service: (1) the large size centrifugally cast tubes we are able to produce and (2) our machining and finishing facilities, including welding.

Our new 16-page general Bulletin—3354-G—gives complete details. Would you like a copy? When writing or calling would you mind telling us the general nature of your high alloy casting requirements? Better yet, if you have specific requirements on which we could help, let us have the details.



OFFICE AND PLANT: Scottdale, Pa.

EASTERN OFFICE: 12 East 41st Street, New York 17, N. Y.

ATLANTA OFFICE: 74—4th Street, N. W.

CHICAGO OFFICE: 332 South Michigan Avenue

DETROIT OFFICE: 23906 Woodward Avenue, Pleasant Ridge, Mich.

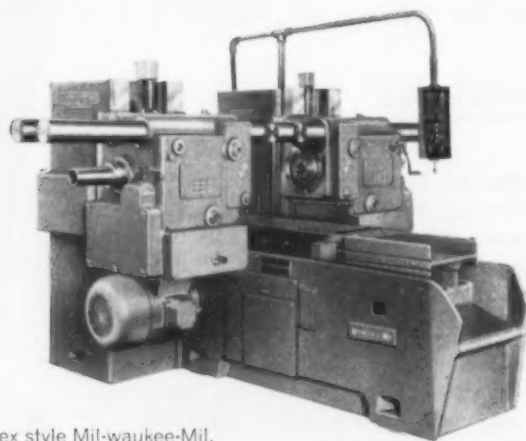
20-FOOT FURNACE ROLLS
Centrifugally Cast

DURASPUN





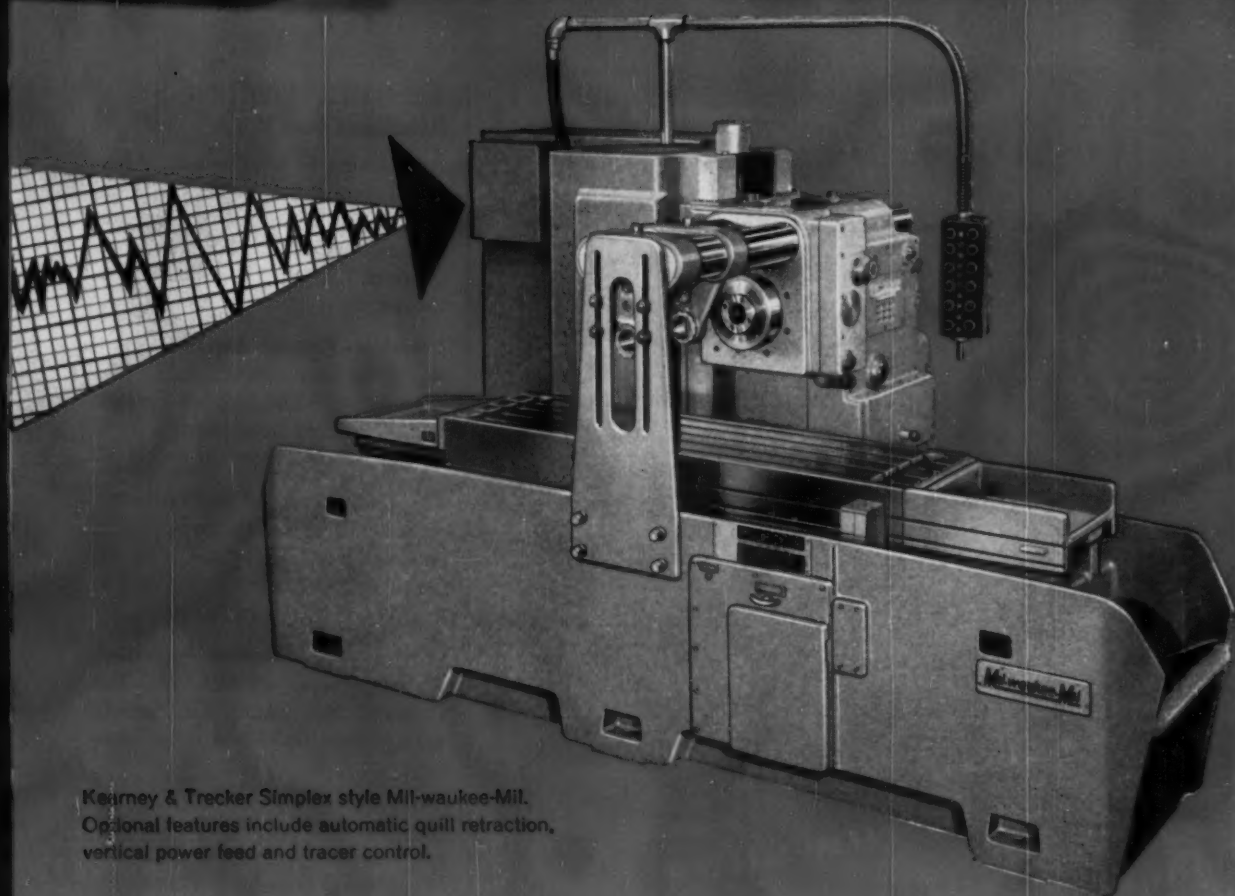
first dial your results from the blueprint ...



Kearney & Trecker Duplex style Mil-waukee-Mil.

**Designers and Builders of Precision
and Production Machine Tools Since 1898**





Kearney & Trecker Simplex style Mil-waukee-Mil.
Optional features include automatic quill retraction,
vertical power feed and tracer control.

then get programmed production automatically
with the **NEW Kearney & Trecker**

Mil-waukee-Mil *BED TYPE*

PRODUCTION MILLING MACHINE

- **dial-a-cycle** panel programs and controls each and every machine function . . . automatically!
- Interrupt or resume cycles at any time without returning to "start" position!
- Change from **dial-a-cycle** automatic control to manual with the flip of a switch!
- Choose from 72 standard models . . . Simplex and Duplex . . . 7½ to 30 hp.

Fast, pre-phased setups slash idle cutter time — dramatically boost finished workpiece production. Do it on this remarkable new Kearney & Trecker Mil-waukee-Mil programmed production milling machine.

Operator simply dial-programs machine function into the **dial-a-cycle** control panel. No guesswork! He merely reads workpiece blueprint and establishes machining sequence with successive phase-switch dials.

Free Bulletin MM-58 —

**Kearney & Trecker Corp., 6792 West National Ave.,
Milwaukee 14, Wisconsin.**



Logan Conveyors speed production in prominent machine tool plant. Gate Sections in foreground provide passageway through assembly line and step plates between rolls allow easy access for operators to work stations. Transfer Car handles incoming sub-assemblies.



Locating ways to cut costs, always a good practice, becomes even more important as competition increases. A "head-to-toe" examination of every element of cost is the order of the day. Many companies are reducing operating expenses through improved materials handling.

Logan Conveyors, with built-in engineering "extras" are being called upon to solve handling problems for economy minded firms of all sizes. Most users report immediate savings in effort, time and space — savings that have materially strengthened their selling position. Certainly there is much to support those who believe that *sales do begin in the shop.*

Write today for more information or for nearest engineer to call.

LOGAN CO., 545 CABEL ST., LOUISVILLE 6, KY.

Logan Conveyors

EXHIBITS, MEETINGS

(Continued from P. 13)

Air Moving & Conditioning Assn., Inc.—Annual meeting, Sept. 22-25, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 2159 Guardian Bldg., Detroit 26.

Porcelain Enamel Institute—Annual meeting, Sept. 25-27, The Greenbrier, White Sulphur Springs, W. Va. Society headquarters, 1145 19th St., N. W., Washington, D. C.

The Electrochemical Society, Inc.—Semi-annual meeting, Sept. 28-30 and Oct. 1-2, Chateau Laurier, Ottawa, Canada. Society headquarters, 1860 Broadway, N. Y.

Pressed Metal Institute—Annual meeting, Sept. 28-Oct. 2. The Cloisters, Sea Island, Ga. Society headquarters, 3673 Lee Rd., Cleveland 20.

OCTOBER

National Assn. of Sheet Metal Distributors—Fall meeting, Oct. 5-8, Marlborough Blenheim Hotel, Atlantic City. Society headquarters, 1900 Arch St., Philadelphia.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 6-8, Ambassador Hotel, Atlantic City. Society headquarters, 1616 K St., N. W., Washington, D. C.

Gray Iron Founders' Society, Inc.—National annual meeting, Oct. 8-10, Sheraton-Park Hotel, Washington. Society headquarters, 930 National City-E 6th Bldg., Cleveland.

The Wire Assn.—Annual convention, Oct. 13-16, Chalfonte-Haddon Hall, Atlantic City. Society headquarters, 543 Main St., Stamford, Conn.

American Machine Tool Distributors' Assn.—Annual meeting, Oct. 15-17, Sheraton Plaza, Boston. Society headquarters, 1900 Arch St., Philadelphia.

Rail Steel Bar Assn.—Semi-annual meeting, Oct. 20-22, Blackstone Hotel, Chicago. Society headquarters, 38 S. Dearborn St., Chicago.



Air Diffusers

by **TITUS**

**Music Wire by
KEYSTONE**

*deliver
quiet air!*

Keystone Music Wire played an important part in the design and acceptance of these distinctive air diffusers produced by the Titus Manufacturing Corporation, Waterloo, Iowa.

Behind their modern surface plate is a surprisingly intricate louver design. Individual baffles control the air flow, and each baffle is held securely in position by a loop of Keystone Music Wire. Formerly, these louvers were riveted in position—a costly, time-consuming and precision process, since the louvers had to be held tightly enough to avoid annoying rattles, yet loosely enough to be easily changed or adjusted.

Keystone Music Wire solved the problem. It improved the appearance of the product, reduced

production costs and permitted the widest possible range of adjustment. Since then, Titus has standardized on Keystone.

Why? A company official puts it this way: "We can't afford to take a chance on anything else. The wire must be of a uniform, high quality . . . perfect in every respect. We have never had a complaint about our diffusers that could be directed to Keystone Wire!"

If you want to make a good product better, contact your Keystone Representative. He will gladly work with you to determine how Keystone Wire can help.

Keystone Steel & Wire Company, Peoria 7, Illinois



KEYSTONE
WIRE FOR INDUSTRY



BUSINESS IS UNUSUALLY COMPETITIVE TODAY AS OPERATING COSTS ARE RISING AND PROFITS SHRINKING

Did you ever meet a vendor who wouldn't sell you the equipment you wanted?

Just "meeting" such a vendor is not enough.

If you haven't *always had* vendors who refuse to supply unsuitable equipment, you've been getting something you don't need.

If you haven't *always had* vendors who are dedicated to advancing your manufacturing technology, you're getting less than you *must* have.

Your responsibility for devising production processes and selecting equipment is greater than ever. You no longer have time to "hand-feed" any equipment builder's design and manufacturing operations.

Yet, you can't afford to install anything other than what is right. Because, if your production methods aren't keeping pace with your competitors', you're already starting to go out of business.

Sciaky knows these facts of business life. To Sciaky, it is obvious that the cost of always having to make *new sales to new customers* is far greater than the cost

of a long term relationship of trust based on fulfilling your requirements. That's why Sciaky refuses to sell resistance welding and production equipment which is unsuitable for the user's needs.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

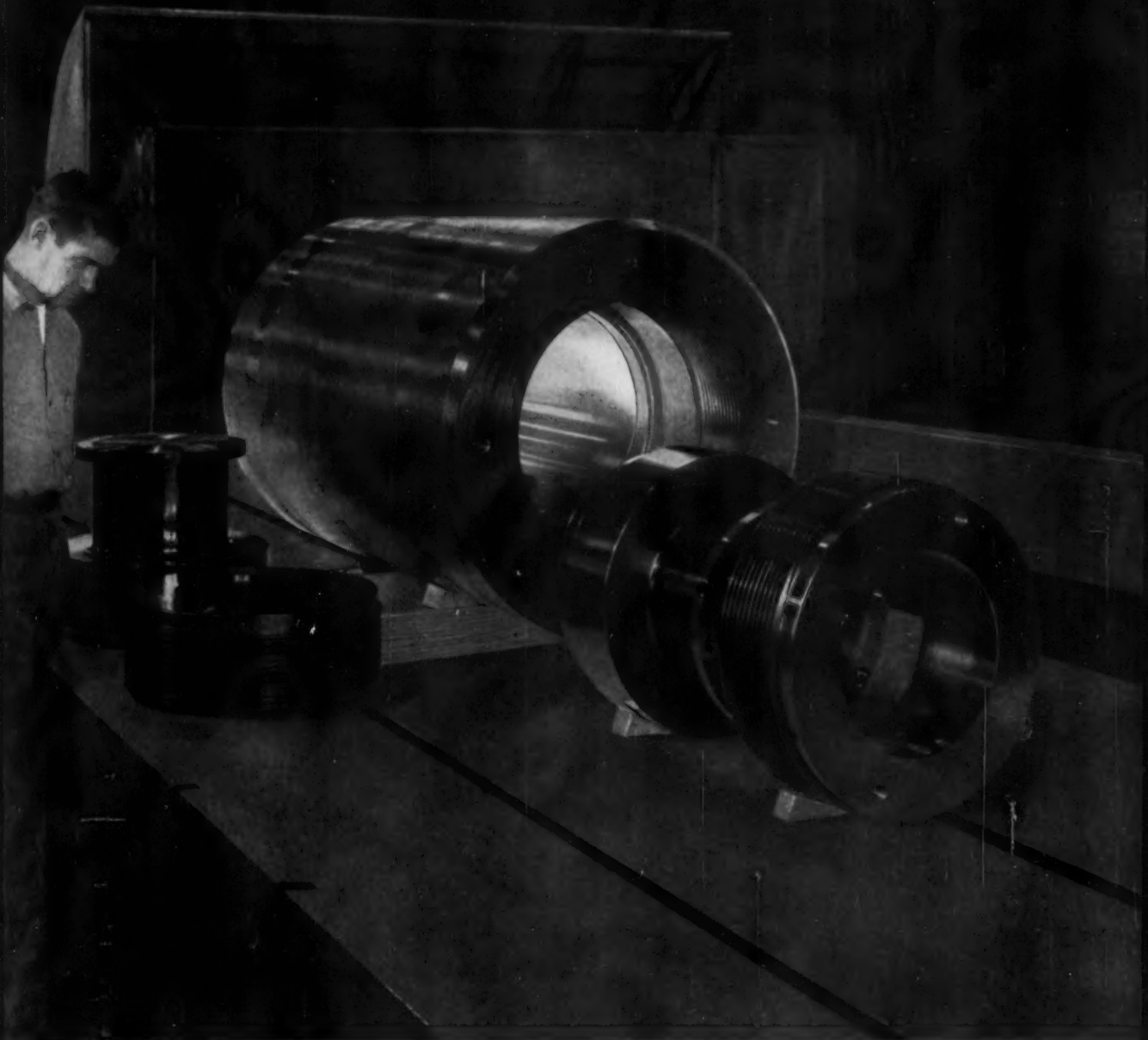
Many manufacturers are taking that advantage. As a result, men just like you are enjoying the full vendor support necessary to steadily improving their company's manufacturing operations. When Sciaky analysis of their requirements sometimes indicates that Sciaky equipment is not suitable, the recommendation for "no change" is immediate. Thus, Sciaky builds the foundation of trust necessary to your success.

The bulletin, "Resistance Welding At Work" contains many factual descriptions of interesting applications of the Sciaky technique. Write and advise of your field of interest.



67A

SCI AKY BROS., INC., 4923 W. 67th STREET, CHICAGO 38, ILLINOIS • PORTSMOUTH 7-5600



WHO FORGES THE TOUGH ONES? & machines them, too

Assume that you've just designed a high pressure cylinder to be used in the production of high energy explosives. It is a good sized forging—the main cylinder is 50¼" long, 31½" O.D., and 18" I.D.—with high physicals. It must be forged of a highly alloyed chromium nickel molybdenum vanadium steel to obtain a tensile of 164,000 psi . . . a yield point of 153,000 lbs. . . and hydrostatic test at 30,000 psi.

Naturally, you prefer one responsible source to do the whole job—one organization to melt the steel, forge, and finish all parts to exact prescribed tolerances.

So, call on National Forge, a company that's been producing big forgings for over 40 years—from melting steel through finish machining and protective coating (dulite, in this case) all in one completely integrated plant. Let us quote on your next job for big machined forgings—and demonstrate the answer to "who forges and machines the tough ones . . . best?"



**NATIONAL
FORGE**

& ORDNANCE
COMPANY

IRVINE, WARREN COUNTY, PA.

For more information on "the tough ones," and the machinery that makes them "best"—write for Bulletin NFO 1.

REPUBLIC ALLOY STEEL solves . . . crown block strength and weight problems

Oil field equipment made of alloy steels can mean the difference between a successful well or just a hole in the ground. This is particularly true in deep drilling operations.

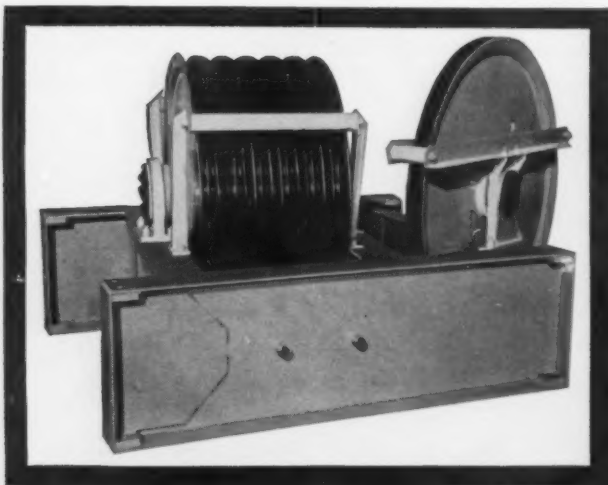
Lee C. Moore Corporation, manufacturers of oil field equipment, uses Republic 4150 Hot Rolled Alloy Steel for shafting in cantilever mast crown blocks. The Republic Alloy Bars are machined for use as crown block shafting at the top of the mast.

This shafting must be able to absorb sudden shock and impact without failure. It must have built-in strength to carry the tremendous weight of the drill pipe. Republic Alloy Steel meets these requirements by providing

an outstanding combination of qualities which permit designing smaller sections to move or carry heavier loads with no sacrifice of strength or safety.

Republic Alloy Steels are unusually tough and strong. These fine steels provide an exceptionally high strength-to-weight ratio that permits the transmission of hundreds of horsepower through tough, strong shafts, gears, and axles free from excess weight. Alloy steel's uniform response to heat treatment results in hard surfaces around tough cores providing maximum resistance to abrasion, friction, and wear.

Learn first-hand how Republic Alloy Steels provide dependable, economical, day-in, day-out service. Call your Republic representative, or write today.

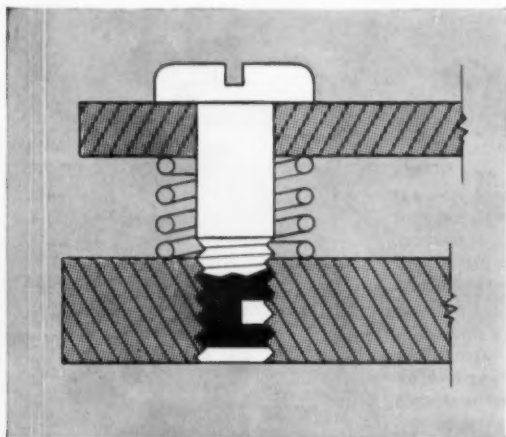


This cantilever mast crown block, manufactured by Lee C. Moore Corporation, Tulsa, Okla., features a shaft made of Republic Alloy Steel.





REPUBLIC MANUFACTURERS' COARSE WIRE to meet every production need. Box Binding and Stapling, Brush Handle, Chain, Garment Hanger are only a few of the qualities regularly produced. Large tonnages are shipped to manufacturers of fan guards, wire partitions, concrete reinforcing specialties, plated shelves, racks and grilles, and numerous other products. Republic wire metallurgists are available to help you in solving production problems. Write today.



REPUBLIC SELF-LOCKING NYLOK® BOLTS provide single-unit answer to vibration, liquid-sealing and adjustment problems. Secure grip is provided by nylon pellet permanently imbedded in fastener body. Continual pressure of resilient nylon forces tight metal-to-metal lock between mating thread opposite the pellet. Write for complete information.



REPUBLIC STAINLESS STEEL meets high temperature and stress requirements. In this official U. S. Army photo, striped area indicates nose cone of "Explorer I" fabricated from Republic ENDURO Stainless Steel, Type 430. Produced by the "Floturn Process", wall thickness of the cone can be increased in specific areas to comply with design requirements of high temperatures and stresses. Additionally, stainless steel provides low thermal expansion and is highly resistant to atmospheric corrosion, erosion, and oxidation at high temperatures. Mail coupon for more facts.

REPUBLIC STEEL



*World's Widest Range
of Standard Steels and
Steel Products*

REPUBLIC STEEL CORPORATION

DEPT. IA-5872-A

1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Please send more information on:

- ☐ Alloy Steels ☐ Republic Manufacturers' Wire
☐ Nylok Nuts and Bolts ☐ ENDURO® Stainless Steel

Name _____ Title _____

Company _____

Address _____

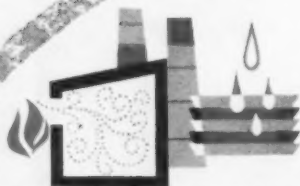
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KAISER ENGINEERS

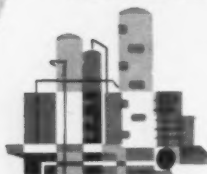
—has designed and built,

—is designing and building,

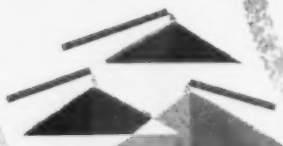
—will design and build...



Air pollution control and water treatment



By-products plants



Ore beneficiation and handling



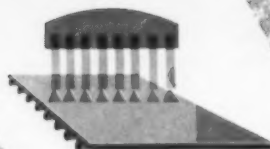
L-D Process plants



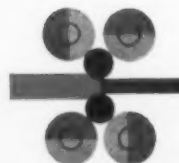
Blast furnaces



Pipe mills



Sinter plants



Rolling mills



Open hearths

Kaiser Engineers designs and builds every part of a steel mill. Been doing it for years. KE has the experience, and the ingenuity, to develop time-cutting, cost-saving new ways to build and operate. The result is a better plant, sooner, for less.

Experience, ingenuity—and a cost-conscious approach. This is what KE can apply to your steel plant expansion program right now. Call or write—today.

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Oakland, 1924 Broadway, CR 1-2211



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When it's tool-up time in Detroit—
**"UNITED AIR LINES AIR FREIGHT
 GIVES US A HEADSTART
 ON NEXT YEAR'S MODEL"**

— E. D. HEILBRUN, Director of Traffic
 The Budd Company, Philadelphia, Pa.



"When Detroit agrees on final changes for next year's cars, our two Philadelphia plants move with all possible speed on jigs and dies. United fits

right into the speed picture. They always have space to Detroit for us when we need it. And they use kid gloves in handling our shipments!"



WALTER BOYD, United's cargo representative, watches the shipment land at Willow Run—on time. You find this dependability throughout United. People go out of their way to give each shipment personal attention.



UNITED AIR FREIGHT RATES ARE LOW

	per 100 pounds*
PHILADELPHIA to DETROIT	\$ 6.05
CHICAGO to SALT LAKE CITY	\$13.65
DENVER to NEW YORK	\$17.70
SAN FRANCISCO to SOUTH BEND	\$21.05
AKRON to SEATTLE	\$22.50

*These are the rates for many commodities. They are often lower for larger shipments. Rates shown are for information only, are subject to change, and do not include the 3% federal tax on domestic shipments.

LOW RATES are only part of the story. United's speed and 80-market coverage on both passenger and all-cargo planes offer distinct competitive advantages.

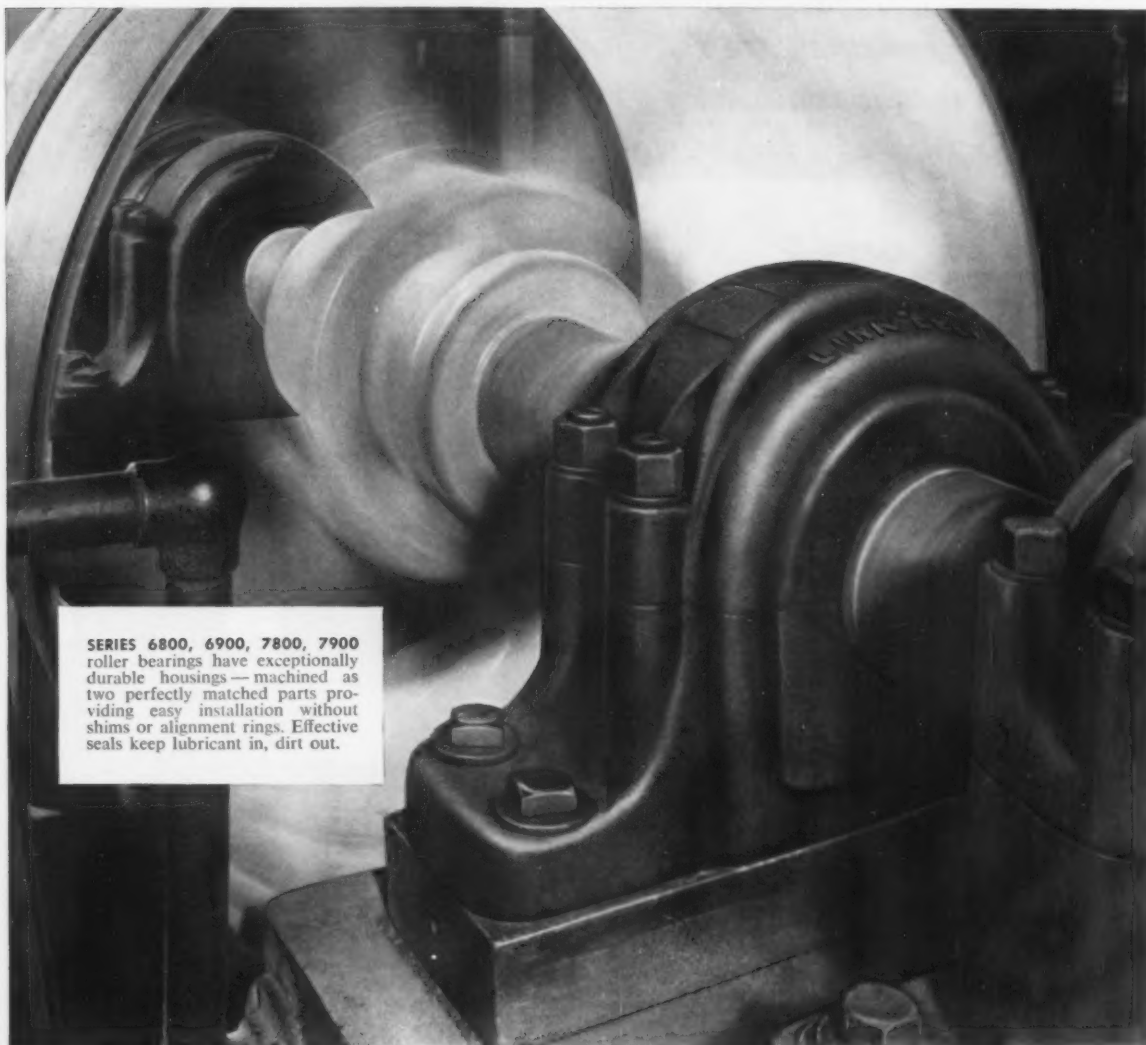
IT COSTS NO MORE FOR EXTRA DEPENDABILITY—ON UNITED, THE RADAR LINE

For service, information or free Air Freight booklet, call the nearest United Air Lines Representative or write Cargo Sales Division, United Air Lines, 36 South Wabash Avenue, Chicago 3, Illinois

NO PINCH,

NO BIND--

ALWAYS-ALIGNED



SERIES 6800, 6900, 7800, 7900 roller bearings have exceptionally durable housings—machined as two perfectly matched parts providing easy installation without shims or alignment rings. Effective seals keep lubricant in, dirt out.

These husky bearings in husky housings adjust *instantly* to shaft misalignment

.....

Shaft deflection often means quick failure for ordinary bearings . . . but not for these rugged Link-Belt *self-aligning* bearings. Adjusting immediately in any direction, they easily compensate for misalignment . . . avoid damaging "pinch" and bind.

You can get full information on Link-Belt's complete bearing line from any one of 40 Link-Belt offices. Or contact your authorized stock-carrying distributor.

LINK-BELT



MANUFACTURERS OF SELF-ALIGNING BALL AND ROLLER BEARINGS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarborough (Toronto 13); South Africa, Springs. Representatives Throughout the World.



Spherical bearings are free to align in any direction, assuring full load capacity regardless of shaft deflection.



When fast mobility counts... depend on LIMA truck-mounted cranes

LIMA truck-mounted cranes guarantee you the equipment mobility you need to reduce profitless trip time between jobs. They give you, too, the *on-the-job* mobility that makes a job go faster for greater profit to you. In addition to mobility, LIMA truck cranes offer you these important benefits:

They are completely versatile . . . as a shovel, crane, dragline, pullshovel

They are available in 6 x 4, 6 x 6, 8 x 4 and 8 x 6 carriers

LIMA truck cranes are engineered for peak performance under the most rugged conditions . . . without costly maintenance downtime

Truly, no other machine gives you as much as LIMA. You'll know why when you investigate. Call your nearby LIMA distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corp., Lima, Ohio.

COMPARE! No other machine gives you as much as LIMA!

1. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Propel and swing gears and power take-off are enclosed in sealed oil bath for dirt elimination and smoother, quieter operation.
5. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
6. Travel from job to job at automotive speeds.
7. Torque converter (optional) automatically adjusts speed to load requirements—minimizing shock loading, making performance smoother and faster.

Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels ($\frac{1}{2}$ to 6 cu. yds.), cranes (to 110 tons) and draglines variable.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

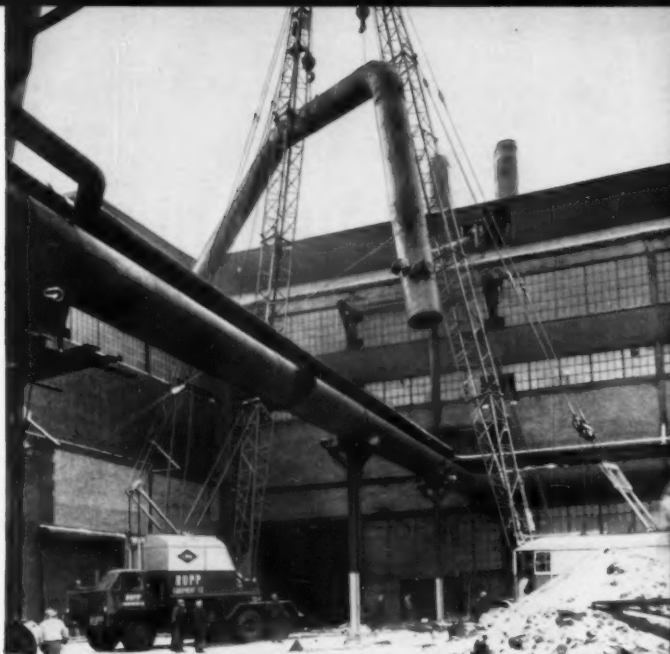


LIMA SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

BALDWIN-LIMA-HAMILTON

Construction Equipment Division—LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works



LIMA truck crane and LIMA crawler mounted crane equipped with 100' booms erecting a gas line at a steel plant.



Two Lima Type 54-T truck cranes, equipped with 40' and 50' booms, setting 31-ton, 50,000 gallon capacity tank.



Lima Type 44-T truck crane, equipped with a 90' boom, placing concrete on a new junior high school building, Dallas, Texas.

Of course you can titrate NIALK® TRICHLOR but you never have to

psp is why • The reason you take the time and the trouble to titrate your degreasing solvent is to make sure its stabilizer is still active.

Users of Nialk trichlorethylene find six good reasons why they never *have to* titrate. All six add up to *psp*—permanent staying power.

psp means neutral The neutral Nialk stabilizer cannot react with acids to form corrosive salts. Yet it will "accept" acids and render them neutral and harmless.

psp means insoluble in water You never lose the Nialk stabilizer during steam distillation or in the water separator of your degreaser.

psp means full protection The Nialk stabilizer has the same boiling point as the solvent, so you get complete recovery during distillation and full protection in your degreaser's vapor phase.

psp means no staining or discoloration of parts There are never compounds present which can cause staining or deposit formation on the metals you degrease.

psp means clean bath and coils Nialk trichlor eliminates those deposits on coils which cut down heat transfer. Nialk baths have gone for long periods of time without coil cleaning.

psp works with all metals Even white metals are degreased safely with Nialk. Chlorides of these metals, which might be formed under unusually severe conditions, are rendered harmless by the Nialk stabilizer.

Hooker Bulletin 70 gives a complete study of stabilizers. Bulletin 72 offers a standard titration method for Nialk trichlorethylene. Send the coupon for either.

Please send: ☐ Bulletin 70, Advantages of Nialk Neutrally Stabilized Trichlorethylene ☐ Bulletin 72, Acid Acceptance Test for Trichlorethylene.

Name

Title

Company

Street

City Zone State

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CHEMICAL CORPORATION**

308 UNION STREET, NIAGARA FALLS, N. Y.

Sales Offices: Chicago Los Angeles New York Niagara Falls
Philadelphia Tacoma Worcester, Mass.
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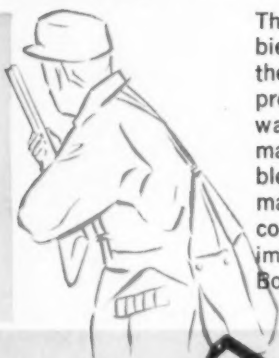
If you have to titrate your degreasing solvent often because it contains stabilizers which wear out, it's time you took a look at Nialk TRICHLORethylene with psp.

From Hunting to Hi-Fi . . .

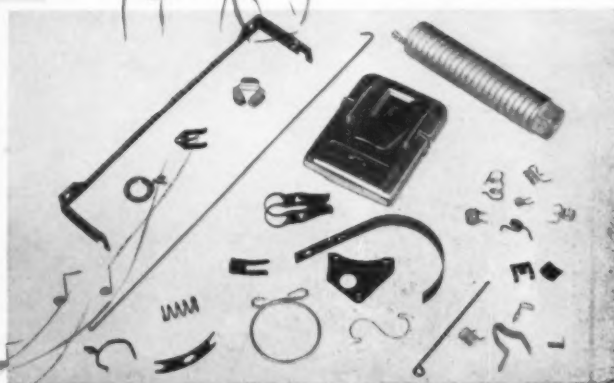
There's a Spring in your Hobby



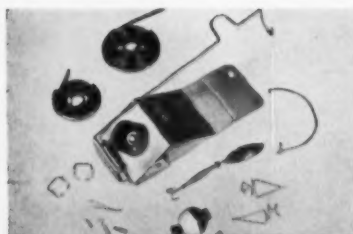
HUNTING — Ammunition clips, trigger springs and gun parts for civilian and military use; even a precision sling shot frame.



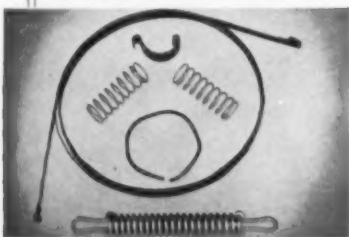
The booming market of hobbies and sports is typical of the far-reaching use of A.S.C. products. Often small but always important, springs make better products possible — and A.S.C. Divisions make better springs through constant research and experiment. Write for "The Picture Book of Springs."



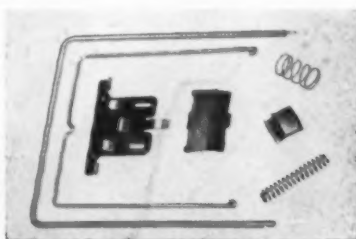
MUSIC — Coils and clips for radio, TV and record players; violin mute springs, guitar levers, springs for cornets, pianos, organs.



FISHING — power springs for reels; wire and flat springs for rod holders, lures; and a frog holder frame.



BOATING — starter springs and parts for outboard motors; shock-absorber spring for trailers; rope tightener spring.



PHOTOGRAPHY — view finder frames, shutter springs and stampings for movie and still cameras.



Associated Spring Corporation

General Offices: Bristol, Connecticut

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B-G-R Division, Plymouth and Ann Arbor, Mich.

Seaboard Pacific Division, Gardena, Calif.

Cleveland Sales Office, Cleveland, Ohio

Canadian Subsidiary: The Wallace Barnes Co., Ltd., Hamilton, Ontario and Montreal, Quebec

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Handsome? Surely, but most important, real *quality* protection. This particular model protects against glare, heat, ultraviolet and infrared radiations as well as against impact of flying particles. Recommended for heat treating, R.R. transportation men, bus and truck drivers and other outside workers. Also available with clear safety lenses.

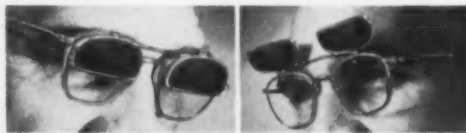
Our records are full of case histories showing how companies cut costs through eye protection. Want the details? Write us direct at Southbridge, Mass., or call your nearest American Optical Safety Representative.

AO 315 FOUNDRY GOGGLE



New 57.8 mm. wide vision lenses . . . double ventilation (40 mesh screen) . . . and a perfect fit over most types of spectacle glasses. *Soft plastic mask* — with leather available. Super Armorplate clear or Calobar lenses, medium, dark or extra dark. For chipping, melting, pouring, grinding etc. Also available as a dust goggle with 150 mesh screen arrangement. (Cat. #316).

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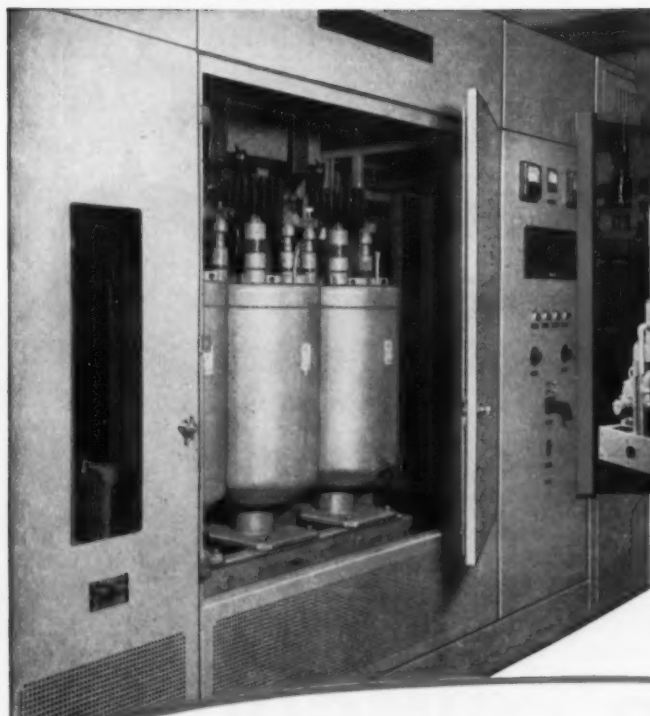
For open hearth furnace work and under helmet when welding. Features a half-eye metal lift-front segment, hinged to frame top. Special friction joint permits lift section to be raised and lowered repeatedly without loosening. Section is available with cobalt blue or Calobar lenses and can utilize a near point segment for welders who need corrected vision for overhead or shoulder high work.

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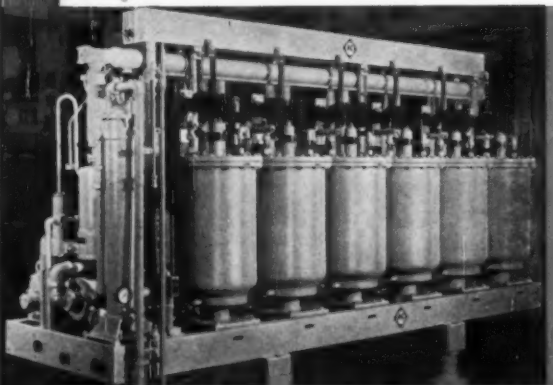
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Open pumped tube unit permits easy access for inspection. Easy to recondition in field.



Enclosed sealed tube unit conserves space, cuts installation costs, eliminates need for vacuum pumping system.

ALLIS-CHALMERS

Mercury Arc Rectifiers

Pumped or Sealed? Open or Enclosed?

Here's how Allis-Chalmers can help you choose a rectifier for your job—

BOTH sealed and pump-evacuated tube rectifiers offer distinct advantages, depending upon the application. Whether your rectifier should be open or enclosed construction also depends on the application. Since Allis-Chalmers offers you a choice of sealed or pumped

tubes in either open or enclosed construction, you get an unbiased recommendation, based on a study of your needs, and not on commercial expediency. And you can be sure of unsurpassed reliability and ease of operation, as proved in hundreds of Allis-Chalmers installations.

Only Allis-Chalmers Excitron Rectifiers give you all these important advantages—

- Fixed excitation anode does not contact mercury — is independent of level, turbulence or impurities.
- Continuous excitation eliminates need for reignition — pilot arc always present.
- Grid phase control located in clean region near anode where ion density is lowest.

- Internal cooling system provides high heat transfer with seamless tube coil.
- Arc-over-free tube eliminates arc-over danger by insulating entire arc path.
- Enameled anode seals provide high strength, trouble-free seal.

For detailed information on mercury arc rectifiers contact your nearest A-C office, or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin, for bulletin 12B8494.

ALLIS-CHALMERS



A-5560

Missing Something ?



The Answer is Pink !



Switch to ^{PINK} CIMCOOL

Stay on top of every situation with CIMCOOL® S2 Concentrate, world's largest selling chemical cutting fluid. Float along comfortably, sure that your cutting problems are cushioned by this radically new and different coolant. Switch to CIMCOOL and relax, because CIMCOOL does all this—

CIMCOOL LOWERS COSTS because it's longer lasting in machines. Therefore, it reduces downtime and cuts labor costs for cleaning and changing.

CIMCOOL PERMITS FASTER SPEEDS and feeds, because of its chemical lubricity. It combines friction reduction and cooling capacity in a degree never before attained by old fashioned lubricants.

CIMCOOL IS CLEANER TO USE because it doesn't soil hands or clothing. It contains no skin irritants. And it's safer because it leaves no slippery film on shoes, floor, machine or work. It can't smoke, can't burn and virtually eliminates rancidity and foul odors.

So swim with the tide of people who are switching to CIMCOOL. Call your CIMCOOL Distributor today. He'll be glad to give you full information on all the advantages of CIMCOOL concentrate—as well as details on the entire family of CIMCOOL Cutting Fluids. Or contact us direct and we'll have one of our Cincinnati Milling Machine trained machinists call on you—without cost or obligation, of course. Write, wire or phone Sales Manager, Cincinnati Milling Products Division, Cincinnati 9, Ohio.

CIMCOOL CUTTING FLUIDS

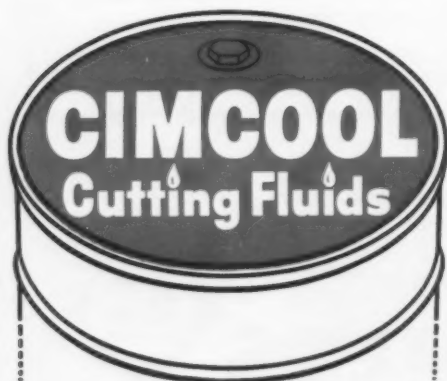
CIMCOOL S2 Concentrate—The famous pink fluid which still covers 85 % of all metal cutting jobs. Effective, economical and clean.

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for 100% of all metal cutting jobs. The Answer is Pink!

Production-proved products of The Cincinnati Milling Machine Co.

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WE wouldn't be in business, if YOU couldn't

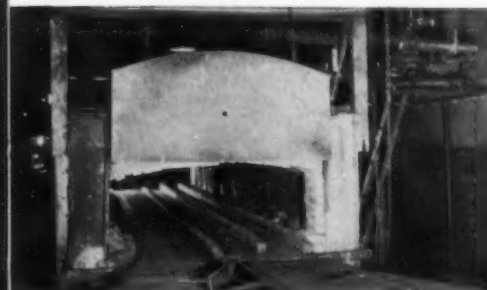
cut costs with these unusual refractories!



- A** Nothing resists abrasion like an abrasive, such as silicon carbide. Here, for example, is a CARBOFRAX lining that outlasted hard-fired brick on the order of 3 years to 6 months. That's why so many operators are using CARBOFRAX linings in dust collectors, downcomers, coke chutes, and similar equipment exposed to severe wear.



- B** Pictured here is the oil-fired furnace mentioned in the copy. It's used for working 450-lb. drill bits. The dull bits are heated in the right-hand opening to 2000 F, then dressed and returned to the left opening for tempering at 1450 F. At the time of this photo, our refractories had been used for well over 3000 hours—were still in good condition.



- C** The three parts of this furnace that take the most abuse are each made of CARBORUNDUM's super refractories. The hearth and skid rails are silicon carbide. The piers are our electric furnace mullite—still going strong after five years. The skids, when pictured, had been in service three years with no replacement necessary.

Take advantage of the one *good* thing to come out of the recession: EXTRA TIME . . . time to look around . . . time to spot areas where better materials will give you better service—and help cut your operating costs.

For instance: Those "vulnerable" areas in your furnace—i.e. areas subjected to flame impingement or heavy loads, or exposed to abrasion or corrosion. Or other "working" areas where heat must pass *through* the refractory. In these spots, you may profit handsomely by substituting one of our special-purpose refractory materials. Materials designed *specifically* to meet these conditions.

- A** **For example:** One customer replaced hard-burned, acid-proof brick in the vertical wall area of a cyclone dust collector with our CARBOFRAX® silicon carbide lining. After three years' service, the CARBOFRAX lining still shows practically no wear. Whereas before, the lining was badly cut out after only a few *weeks*. Quite a saving! . . . in materials, in labor, in downtime.

- B** **For example:** In another furnace, 300-lb. annealing baskets and 50-lb. motor heads were pushed directly over a fireclay hearth. But maintenance costs were so high that a CARBOFRAX hearth was substituted. This not only solved the maintenance problem, but also transmitted the heat rapidly—and made possible a *saving of one third in fuel*.

- C** **For example:** The sidewall, backwall and main arch of an oil-fired furnace were replaced with Carborundum's super refractories because the operator was getting only three months life. After the changeover, life increased 300%!

Granted, Carborundum's refractories cost more. But they also *save* much more—in terms of refractory life . . . furnace downtime . . . and maintenance costs. They also *do* more—in terms of higher furnace output . . . faster heat transfer . . . and increased efficiency. In short, *we* wouldn't be in business if *you* couldn't cut costs with super refractories.

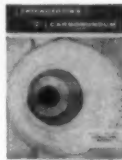


Here's how you can start cutting costs:

It will take less than an hour to read these two booklets about the applications — and **properties** — of Carborundum's unique, new super refractories. Send for them today.

Subscription to "Refractories"

is yours for the asking. This technical brochure is published approximately every other month; contains a wealth of information on new refractory materials, lining techniques, etc. Offer limited, so write soon.



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CARBORUNDUM

Registered Trade Mark

How U. S. Steel Supply's Any Steel, Anywhere, Any Time Service "cut handling costs 19%"



reported by

Mr. Myron Sage

vice-president

The Gledhill Road Machinery Company
Galion, Ohio

"Our former production schedule had five steps in steel handling before fabrication," says Mr. Sage, "but U. S. Steel Supply has reduced it to a single operation.

"We've shown substantial savings here, because now we're able to maintain a consistent production schedule. Through U. S. Steel Supply's Any Steel, Anywhere, Any Time Service, we get pre-cut sheets delivered right to our door on an over-night basis.

"Bothersome production delays such as storing steel, hauling it in and out of the plant, and cutting mill sizes to exact specifications are completely eliminated. For us, it has meant increased production and a higher plant efficiency."

Here's how this service can work for you!

If you would like to see how other steel users are saving money and increasing profits as a result of Any Steel, Anywhere, Any Time Service, write to U. S. Steel Supply at the address below. There's a good chance our representative can help *you* eliminate idle equipment, increase production, and cut inventory costs.

Remember . . . you get Any Steel, Anywhere, Any Time Service from . . .

U. S. Steel Supply

Division of



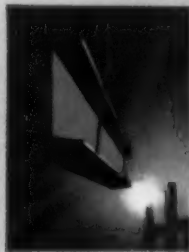
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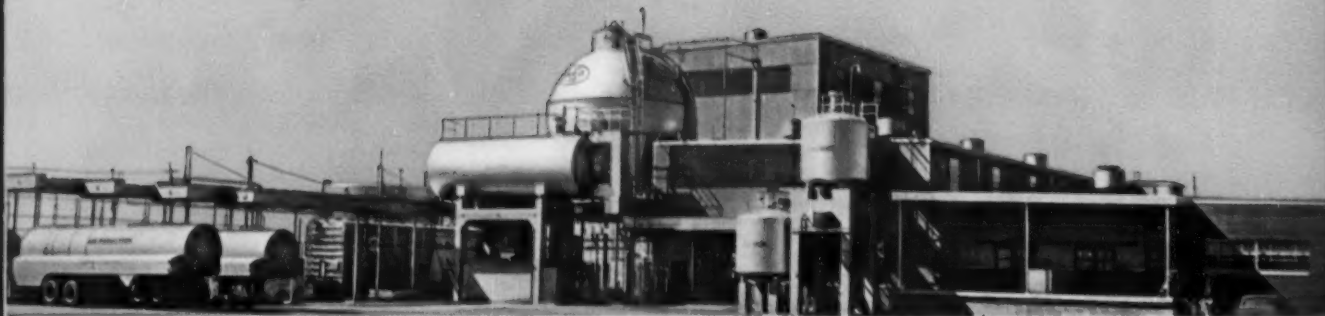
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In other industries, too, Air Reduction gases are playing an important role—food processing, electronics, steel, aircraft and missiles, and chemicals.

To all industries, Air Reduction supplies gases in whatever quantity needed, and in whatever form—gaseous or liquid. (Except hydrogen—available in gaseous form only and helium also available in liquid form currently on West Coast only, elsewhere in gaseous form.) Air Reduction industrial gas specialists, with years of practical experience and technical training, are at your service to help you make the most efficient use of industrial gases. Ask the Airco representative in your vicinity to show you why your gas requirements are best served by Air Reduction.



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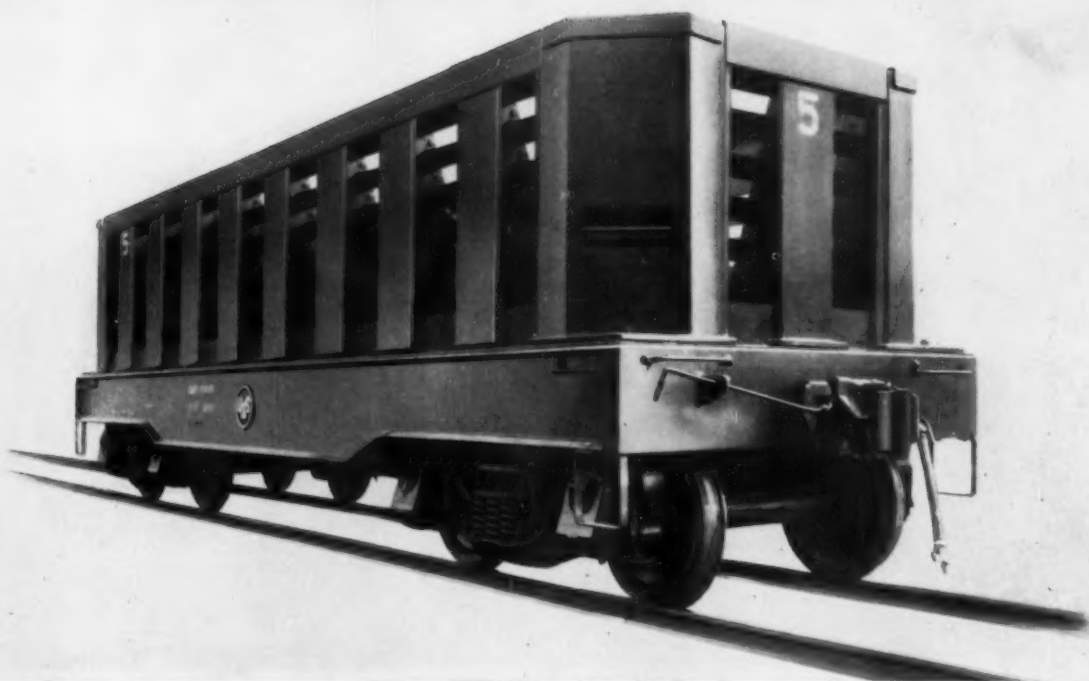
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Crop Cars—built to last by a company that uses them

Though it may appear to belong in a stockyard, this unusual-looking car is for transporting cropped ends of hot steel billets from the shear line to the scrap yard. One of 24 such cars recently built for U. S. Steel's Gary Works, it is typical of the many special-purpose industrial cars turned out daily at the Johnstown Works of United States Steel.

Fabricated from all-rolled steel, the body of this Crop Car has open sides and ends to facilitate cooling of the hot billet ends so they can be picked up by an electromagnet. 30' long over the end sills, 9'4" wide, and 9' high, it is fitted with standard A.A.R. Type 100-ton trucks and multiple-wear wheels.

The side posts are fabricated from 33"-wide flange beams, and the drop-center sills from 30"-wide

flange beams. The floor is $\frac{3}{4}$ " plate overlaid with railroad rails and built up on all sides to retain several inches of slag to absorb impact and withstand high temperatures. Inclined retaining bars inside the car are notched to accommodate rows of replaceable 5" x 1 $\frac{1}{2}$ " bars running the length and width of the car.

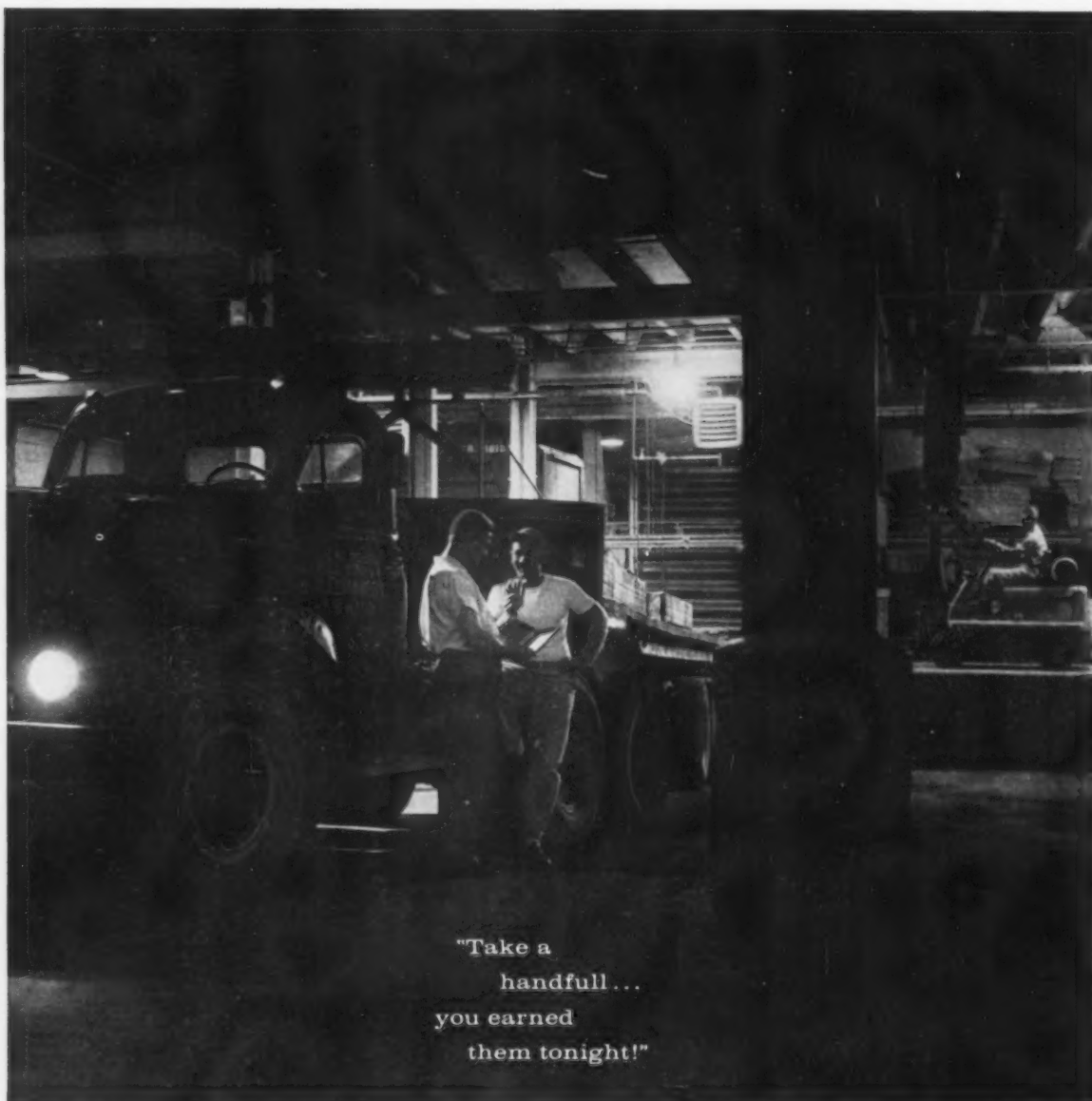
Built for rugged service, this car weighs 57 tons unladen and will easily carry 100 tons. Special modifications are available to meet users' requirements. Our engineers will be pleased to call at your convenience to discuss your requirements for industrial cars. Meanwhile, send for a free copy of our 32-page illustrated booklet—"USS CUSTOM DESIGNED CARS."

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"Take a
handfull...
you earned
them tonight!"

The Braves never had a warmer welcome than Charlie Gates got in Milwaukee that night.

The Friday night crew was standing by. The whole plant had been alerted for weekend work. Charlie had just come through with a real payload—a truckload of Inland Steel sheets, urgently needed by a sheet metal fabricator who was working on a contract for the top platforms of power mowers. Whether or not this power mower manufacturer kept a valuable contract depended on the fabricator's

beginning delivery of parts by Monday morning.

On very short notice, Inland was able to do its part by making delivery of a specially required steel a full week ahead of time. It isn't easy to juggle production schedules this way; it isn't always possible. But what's important—when you do business with Inland you'll find people who have a willingness to go out of their way for you.

Open July 1—New Inland District Sales Office in Houston, Texas

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Scale-Free Forging Billets

By preheating combustion air to 2000°F, a new system of combustion permits scale-free heating for forging or extrusion. Metallic lined regenerators operate in pairs to alternately pre-heat primary air and store heat from secondary combustion. The products of combustion are strongly reducing: 20-pct H₂, 13-pct CO and 3.5-pct CO₂. The system offers high fuel economy and low maintenance.

Demand for Annealing Lines

Three new continuous annealing lines are to be announced in the near future. Although tin plate demand is lagging and electrolytic capacity is up sharply, more annealing lines are needed. Reason: Can makers are specifying continuous annealing on their tinplate orders.

High-Strength Conductor

Where the strength of steel is needed along with the conductivity of copper for electrical applications, a new method bonds the two metals side-by-side. By obtaining the desired ratio of widths of copper to steel, the material attains a strength over 40,000 psi. Cost is said to be low.

Policing the Middle East

The Administration expects to pay for policing the Middle East out of its regular budget. Extra procurement or extra troops are not planned. Here's why: Military equipment is in ample supply, unlike pre-Korea. Defense contractors can easily go into action on short notice if need arises. And the job is being done without large numbers of troops.

More on Direct Reduction

Using carbon as the reducing element and electricity as the energy source, a new method produces both a high grade of pig iron and a quality carbon tool steel. It's a direct reduction technique not intended for tonnage production.

Yet it may set the pattern for future direct reduction processes. The unit is a double-hearth, network frequency induction furnace where iron ore is reduced by a continuous supply of carbon dissolved in the iron bath.

Metallic Spray Coating

A new protective coating, about to be announced, will improve metals for high-temperature applications in 1800°-2000°F range. Applied in coatings of 0.002 to 0.010 in., it affords oxidation, corrosion and abrasion resistance. Researchers say its potential is in jet aircraft and missile parts not requiring high impact resistance.

Aircraft Spending to Climb

Government spending for military aircraft is to climb in the months ahead. The extra dollars for this purpose were added to the defense budget as a result of Congressional concern over events in the Middle East. About a dozen more B52 bombers and 60 KC135 tankers will be built.

Protection for Porous Metal

A new plating process coats the pore surfaces of porous parts without plugging the holes or capillaries. By this method an inexpensive base metal such as iron or one having a specific property, such as aluminum for its low density, can be given a coating to protect it against corrosion. Beside use for self-lubricating bearings and metal filters, the method may adapt to reactor vessel chambers and metals for nuclear fuel elements.

Improve Research Incentive

Incentives are being proposed for improving Air Force research and development under contract. Now, firms absorb many research costs that should be reimbursable. There's little reason to seek military research unless production orders follow. Air Force is urged to allow higher fixed fees for contractors. Under this proposal, cost formulas would be more attractive and contracts would cover longer periods.

Farval spray lubrication system keeps A-C ball mill running smoothly

Inspecting the new installation of a Farval spray lubrication system on an Allis-Chalmers ball mill at Marquette Cement Company's Milwaukee plant is Erv Klovers, project engineer at Allis-Chalmers.

Mr. Klovers' task was to find an economical and dependable lubrication system to guard the large diameter, wide-faced gears that power the ball mill. So he contacted Farval and together we designed the original spray lubrication system for ball mill gearing. It was completely flexible in arrangement and position—fit his requirements to the letter—showed savings in both lubricant and labor costs.

With Farval, gears can be sprayed with the proper lubricant in any amount specified, as often as necessary—without waste or mess.

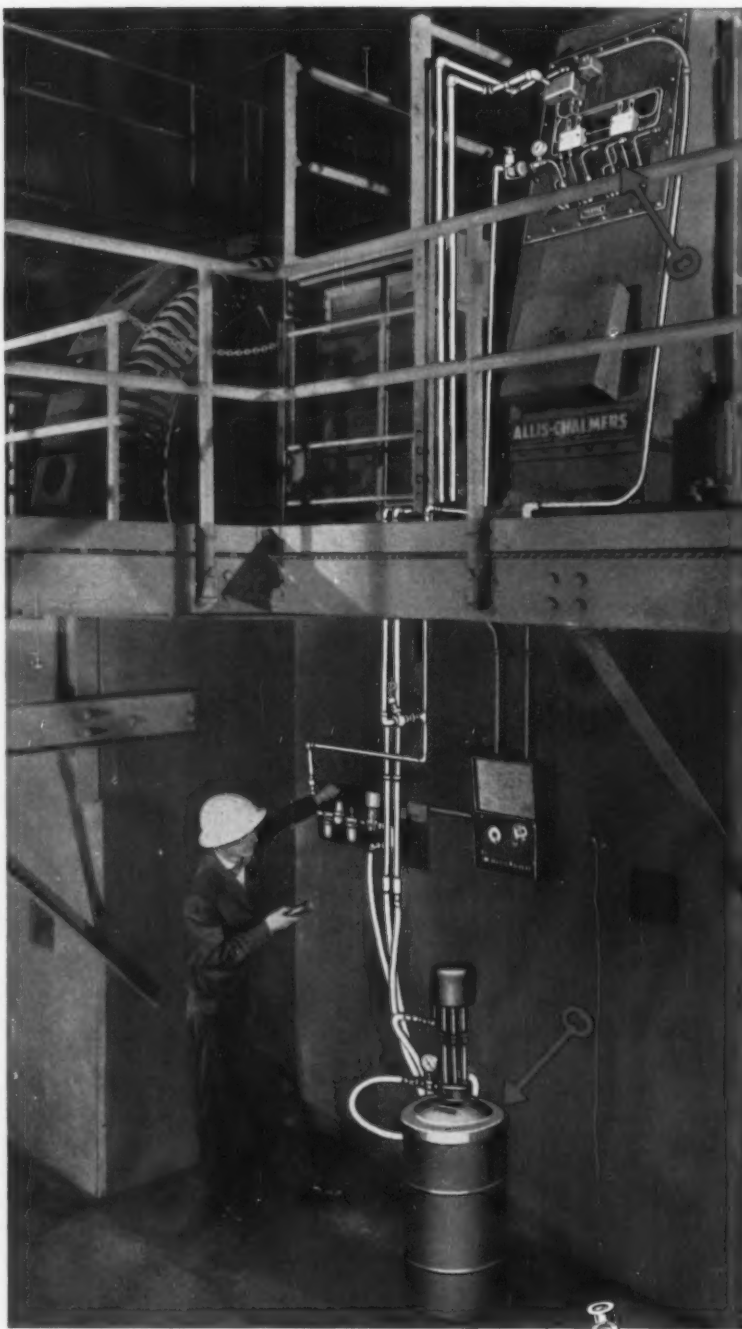
Hooked up to existing compressed air sources, Farval Spray Valves deliver the lubricant to tooth surfaces through controlled air delivery. Large porting in Farval Dualine valves ensure correct lubricant supply with minimum pressure-drop and very minimum grease separation.

This simple, inexpensive but thorough lubrication system can help you cut maintenance costs as it has for hundreds of others across the nation. See what a Farval system can do for you by asking for Bulletin 26-S. Write The Farval Corporation, 3282 East 80th Street, Cleveland 4, Ohio.

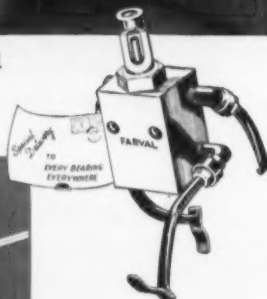
KEYS TO ADEQUATE LUBRICATION

Wherever you see the sign of Farval—familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated.

*Affiliate of The Cleveland Worm & Gear Company,
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TECHNICIANS: Large numbers of workers are being trained for the steel plants now under construction in China.

China's Industrial Target: To Overtake Britain in 15 Years

With the help of Soviet Russia, China is making vast strides in developing its potential.

New steel and machinery plants are progressing under five-year plans.—By Robert Westgate.

■ With the end of its first five-year plan last December, Red China completed what it calls the "initial big stride toward industrialization."

Under the plan, its new industry made great strides, setting the stage for the next series of five-year steps. Goal of the new plan: "Overtake

and surpass Great Britain within 15 years in the output of steel and other important products." These include coal, electric power, cement, chemical fertilizer and machine tools.

Impressive Results—Looking back on the first five-year plan, results are impressive.

Under the plan, steel output rose from 1.49 million net tons in 1952 to 5.78 million tons last year. Coal production increased from 70 million tons to 141 million tons and output of electric power almost tripled.

Production of metal cutting machine tools increased by over 60 pct under the plan, from 13,700 units

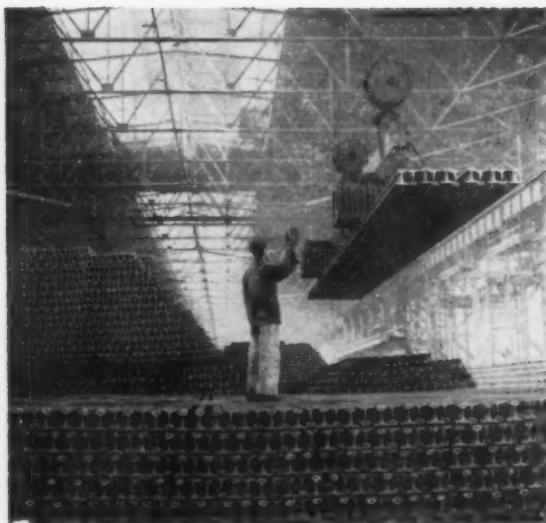
in 1952 to 22,600 units in 1957.

Building the Tools—Some technical developments include 1000-cubic meter blast furnaces, 200 plus ton openhearth, advanced power equipment, motor trucks, jet aircraft and 4-spindle automatic lathes.

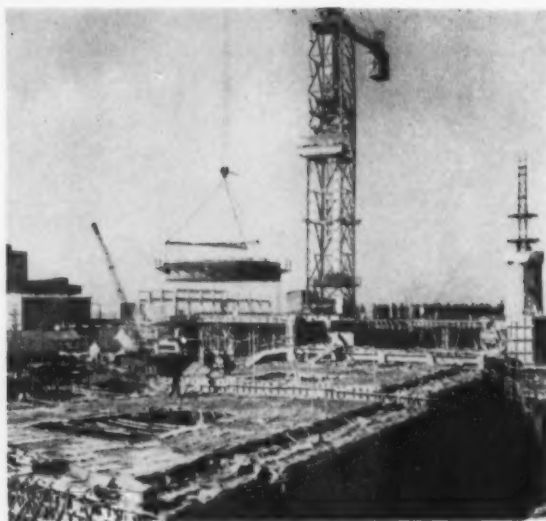
According to the Chinese sources, since the first quarter of this year

About the Author

A New Zealander, Mr. Westgate has traveled widely in Europe and Asia. He specializes in observing Iron Curtain countries, particularly Communist China.



RAILS: Heavy rails are produced at Anshan. Range of rolled products has greatly increased as China's steel industry continues to develop.



BLAST FURNACE: Building site of first blast furnace at Wuhan works. Chinese claim it will rank with the best when in operation late this year.

the country has put into regular production 450-hp diesel engines, high-precision gear grinding machines, 3-in. vertical drilling machines, and all-purpose tractors.

Going After Britain — Industry's contribution to this previously agricultural country has risen from 18 pct five years ago to 30 pct today.

Now, the second five-year plan has as its goal putting Red China on the way to overtaking Great Britain within 15 years. By that time, China could be among the world's leading industrial countries.

Between 1953 and 1957, China's industrial production increased an average of 18 pct a year; in the coming five years it is scheduled to go up 15 pct annually.

Natural Resources — What is China relying on to close the gap with Britain? A big advantage is its abundance of natural resources.

Iron ore and coal reserves are more than adequate as is hydroelectric potential. In tungsten, tin and molybdenum deposits, China claims to lead the world, and she also has rich reserves of copper and oil.

Soviet Aid — But the key to China's industrialization are three

iron and steel centers, all being built with Soviet aid.

The most established is in Anshan, Manchuria, the country's only established steel city. Anshan had a peak wartime output of 880,000 tons. Output now has risen to over three million tons per year. New construction includes six blast and ten openhearth furnaces, rolling mills, seamless tube mills, ore beneficiation and sintering plants, and other facilities.

First Class Equipment — Construction of two other steel producing centers, at Wuhan and Paotow, began in the first half of last year. They are being designed and built with Soviet help and from the bottom up and will be equipped with Soviet-made blast furnaces and better than 500-ton openhearth. When the first phase of construction is completed, they will each be producing at the rate of 1.7 million tons per year.

Wuhan will be the second largest and most modern steel center in China. Work is currently going ahead on an open cut iron mine at Tayeh, some 50 miles southeast of Wuhan. Deposits are said to be sufficient for hundreds of years. Another plant projected for Wuhan will produce heavy machine tools.

Other Plants Coming—The Paotow works will be based on big deposits of coking coal and iron ore in the western part of the Inner Mongolia plateau. The first blast furnace there is scheduled for operation by October, 1959. The No. 1 blast furnace at Wuhan will go into operation this year.

There are numerous smaller steel producing centers in other parts of China and more are being established under government policy to speed up industrialization. Shanghai's steel plant is being expanded to produce 600,000 tons of steel a year.

1958 Target—China's 1958 steel output target is 7.7 million tons and the goal for iron is 8.8 million tons. During the year, trial manufacture is to begin on cold-rolled silicon sheets, heat-resistant stainless for aircraft, and new and larger blast furnaces and rolling mills.

At present, the Chinese steel industry produces a range of some 370 different types of steel, including high-grade alloys.

Machine Tools, Too—In the past five years, the Chinese have also set up many machine tool plants, again with Soviet help. According to Pe-

king radio, more than 800 big industrial enterprises of various kinds have been set up since the beginning of the first five-year plan.

The northeastern city of Shenyang has become one of the country's chief machine building centers and plants there include one for making pneumatic mining tools and three for various types of machine tools. Also in Shenyang is a new plant that builds blast furnaces and openhearth, with the destination of Anshan.

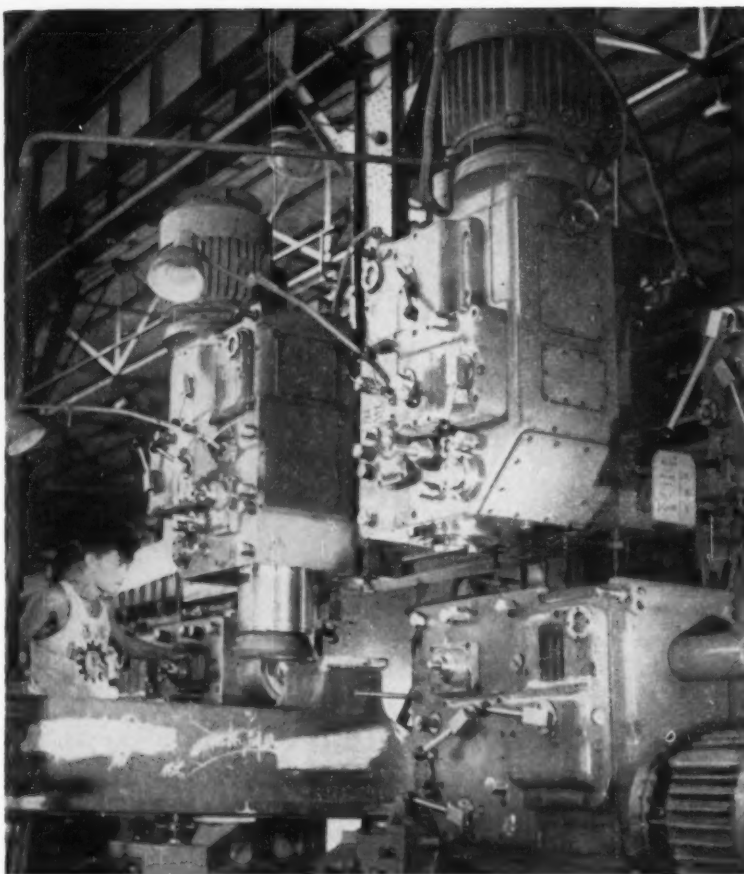
Equipment Producers — In what recently were open pastures at Furlark, northwest of Harbin, Soviet engineers are currently helping build a plant which will produce steel rolling and smelting equipment. Already, the Chinese claim, their machine building industry is capable of supplying about 60 pct of the country's needs in machinery.

By the third five-year plan, the country expects to be basically self-sufficient in equipment for its power and iron and steel industries, as well as a number of others.

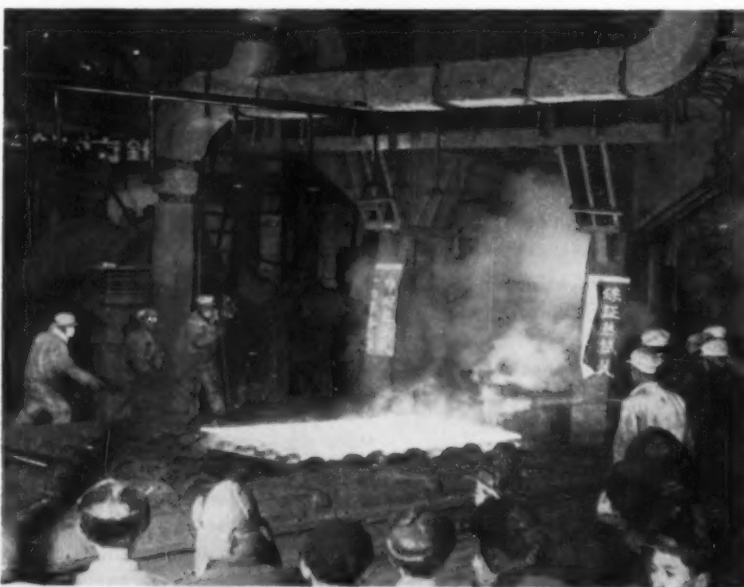
Technicians Trained — Like the Russians the Chinese are training technicians in impressive numbers. China's technical force is said now to number 600,000. The country now has its own corps of industrial designers. In the iron and steel industry, the Peking designing office, with branches at Anshan and Wuhan, has become a big training center.

They are reported to have completed plans for a large integrated iron and steel works with a capacity of over one million tons of high-grade steels for precision instruments and other machinery. It is to be built in North China.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



MACHINE TOOLS: Processing a lathe body at a machine tool plant at Wuhan. This plant was remodeled with the help of Soviet engineers and most of the machines in the plant were sent from Soviet Union.



PRODUCTION: New plate mill at Anshan turned out its first products last year. The Chinese-designed mill will produce plants for production of cars, boilers, ships and bridges for fast-developing China.

Armco Sets Off Steel Price Rise

U. S. Steel and Others Quickly Fall Into Line



Armco's Gray

"The old order changeth, yielding place to new . . ."



"Big Steel's" Blough

"Big Steel" abdicates traditional role as industry price leader.

Boosts stir up politicians, but higher prices are expected to stick.—By J. B. Delaney.

■ The steel price increases appear to have generated more heat among the politicians than among steel users.

Sen. Estes Kefauver, whose favorite whipping boy is steel, acted as though steel firms had stabbed the economy in the back. Other politicians and Administration officials clucked worriedly about the inflationary effect of higher prices.

Mills Used Restraint—Steel users were worried, too. Many of them are in tough competitive situations which will preclude passing along the entire steel price hike. But few were outspoken in their criticism. They appeared to understand what steel firms were up against.

Actually, it could be said that the steel companies acted with considerable restraint on prices. Their

How The IRON AGE Called Shots on Steel Prices

The IRON AGE kept its readers well posted on steel price developments. Here are excerpts from its weekly news release, based on its Steel Summary:

March 19, 1958: "In spite of the gloom in steel this week, there is no foundation to rumors that steel prices will not rise again this summer. . . ."

June 25, 1958: "There will be no steel price boost on July 1 . . . the odds overwhelmingly favor one at any time between July 2 and September. . . . Steel prices are bound to go up. . . ."

July 2, 1958: "There's an outside chance that the prices of some individual products will go up during July. . . . The price boost will be on a selective basis. Not all steel products will be affected at the outset. It's even possible that U. S.

Steel will follow, rather than lead, in establishing new prices on some steel products. . . ."

July 30, 1958 (prepared some 30 hours before Armco's price announcement): "The coming steel price increase may be smaller than had been expected. The IRON AGE has learned that U. S. Steel Corp. is considering a price advance of only \$4 per ton on major steel products." Subsequent to Armco's action, a last-minute insert predicted: ". . . This signals the move for all steel companies to advance prices \$4.50 a ton within the next few days. Before the week is out, all steel prices except tinplate will have been boosted. Although U. S. Steel had considered around \$4 a ton increase, it will meet the posted prices of other steel firms."

Aluminum Price Rise

Aluminum prices are up, too. For details, please see page 122.

labor costs are up a minimum of 25¢ an hour since Jan. 1. At least five firms operated in the red during the first half, before the full impact of higher employment costs on July 1. During July, even the stronger steel firms were skating on thin financial ice.

Hearings in Offing—Sen. Kefauver was still making a lot of noise this week, and probably will for some time in the future. He is set to hold public hearings on steel prices, perhaps this week. He also has asked Attorney General Rogers

and the Federal Trade Commission to look into possible antitrust law violations.

But the chances are that after all the shouting is over the steel price increases will stick.

Better Times Ahead?—For steel users, something good may come out of all the hubbub in the years ahead. Steel firms are sick and tired of taking the rap for the circumstances growing out of perennial wage increases. Roger Blough, chairman of U. S. Steel Corp., indicated last week that steel labor contract negotiations next year will follow a different pattern.

"We hope," he said, "to arrive at a contract involving considerably less of an inflationary aspect." What he meant by that was that he hoped to hit upon an agreement that would not necessitate compensating steel price boosts.

Armco Sets Pace—U. S. Steel this year cheerfully abdicated its traditional position as price leader for the industry. Armco Steel Corp. took over that spot when it announced on July 29 that it was increasing its hot and cold-rolled sheet and strip product prices about \$4.50 per ton, effective July 31. U. S. Steel and others followed in quick order, although effective dates of the boosts varied by one or more days.

Later last week, Republic Steel Corp. stepped out and kicked up prices of many other steel products, effective Aug. 4. This, too, was expected to set off a chain reaction among other steel firms anxious to get on the price bandwagon.

Products Affected—By last week end, products already boosted by one or more steel companies included hot and cold-rolled sheet and strip, enameling iron, long terne, galvanized, hot-rolled bars, electrical sheets, cold-finished bars, continuous weld pipe, electricweld pipe, oil country casing and tubing, wire rods, and other wire products.

For detailed list of new steel prices, please see page 116.

Why Steel Prices Had to Rise

Steel Earnings—1958 versus 1957

COMPANY	Second Quarter 1958	Second Quarter 1957
U. S. Steel	\$73,224,051	\$115,943,199
Bethlehem	29,003,419	50,273,507
Republic	15,321,096	24,865,071
Armco	11,628,179	19,196,755†
Jones & Laughlin	4,034,000	13,770,000
National Steel	6,527,762	12,607,341
Youngstown Sheet & Tube	4,236,641	11,317,042
Inland Steel	12,118,584	15,150,752
Colorado Fuel & Iron	1,063,388	4,352,322
Wheeling	2,464,000	2,834,000
Crucible	226,932	2,673,390
Pittsburgh Steel	563,778*	1,610,063
Granite City	1,841,401	2,828,505
Allegheny Ludlum	646,067	2,951,427
Detroit Steel	58,161*	788,298
Alan Wood	305,998	536,698
Copperweld	94,633*	1,000,987
Continental	1,088,915	1,024,048
Sharon	735,721†	1,137,381
Acme	1,137,369	1,707,322

* Indicates loss.

† Adjusted to reflect merger with National Supply Co.

Chances are that before the week is out, the entire steel industry will have increased prices of nearly all steel products.

The one certain exception will be tinplate, which will not move for the present because steel firms must give 35 days' notice to their customers. The odds are that tinplate prices will join the parade eventually.

Earnings Down—Why U. S. Steel Corp. chose to let other steel firms move first on prices is obvious. It was tired of its unwanted role as price leader. It was tired of being the target for the customary blasts that seem to have become traditional when steel prices rise.

Meanwhile, steel earnings reports for the second quarter and first half showed why steel prices had to go up. While profits were somewhat better in second quarter than in the first, six-months' earnings for most firms were still far below the same period in 1957.

A Tough July—The first half earnings picture reflected the low level of sales and the impact of the

five-cent cost-of-living wage boost effective on Jan. 1. Even though business was on the rise during July, the earnings position of the steel firms worsened, due to the 20¢-plus employment cost boost on July 1.

U. S. Steel's earnings in first half '58 were \$135.6 million as against \$231.4 million in the same period of '57. Bethlehem's first half profits were \$53.8 million compared with \$103.7 million last year.

In The Red—These firms lost money in the second quarter: Pittsburgh Steel \$563,778; Detroit Steel \$58,161; Copperweld \$94,633, and Sharon Steel \$735,721.

The average steel price increase of about \$4.50 per ton is less than half the ultimate cost increase steel firms expect will develop as an outgrowth of the wage boost. Mr. Blough estimated the direct employment cost boost for his company to be "well over \$4 per ton." From past experience, steel firms know that the resulting inflationary spiral will about double their direct costs in the months ahead.

Why Jets Are Going Stainless

Ability to Withstand Heat Is a Major Attraction

Aircraft designers are specifying more stainless steels for new military jets.

Strength, weldability, and fabricating also come into the picture.—By T. M. Rohan.

More stainless and high alloy steels are going into newer military jet planes as designers work against the intense heat of Mach III flight.

At Mach III, an aircraft is traveling three times the speed of sound

—or about 2200 miles an hour.

Two of the most glamorous planes now on the boards—the B-70 bomber and F-108 fighter—will have 70 to 80 pct of the airframe made of alloy and stainless steel. The biggest present use is in the B-58 Hustler, world's first supersonic bomber, which has about 50 pct alloy and stainless, a large percentage in honeycomb.

In Space Travel—The first manned space ship—the X-15 which will go 3600 mph has an

Inconel X outer skin, titanium bulkheads and stainless steel structural parts in areas where severe forming is done. Commercial jet transports will also use more steel as speed climbs, especially around the engine where conducted heat plus air friction add up to 1000°F.

On all Mach III planes, temperatures at cruising speed will reach 500-550°F for the skins and double that in engine areas.

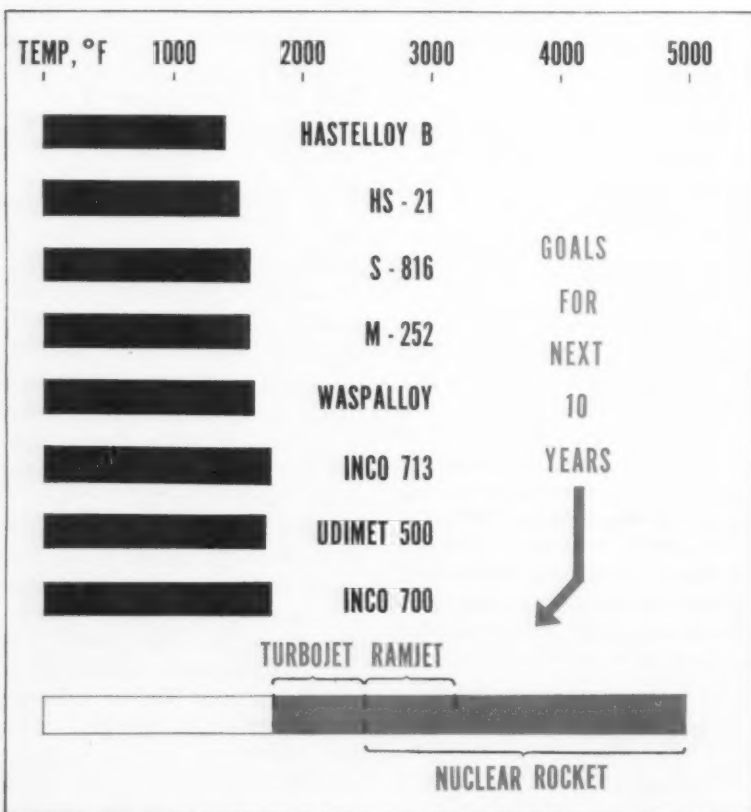
Different Construction—One major departure in building Mach III aircraft is a sharp increase in welding, even of whole body sections. Reasons are to save weight of rivets and for better sealing. Welds are all X-rayed and reworked if necessary for absolute reliability. Alloys to be used include semi-austenitic PH grade stainless and low alloy steels.

Weldability of these compared to other high temperature metals works in their favor. For the steel producers, meeting aircraft quality, size, flatness, and other tight specs are the biggest hurdle. Any physical damage or even oil spots will affect heat treating and welding cycles.

B-70 Highlights—The B-70 will be a 6-engine, heavy delta-wing bomber to replace the present B-52. It will be a growth airplane in that it is built for later improvement. It will cruise at 80,000 ft, weigh 250 tons gross and have a range of 7000 mi.

Principal uses of stainless on the B-70 will be in structural framing members, wing and body skins, and near the hot end of the engine compressor. On the F-108 the steel will be used in about the same areas. It will include sheets for skins, foil for honeycomb, forgings and some rolled structural supports. Cooler areas will use aluminum.

Needed: New Alloys For Future Aircraft Engines



Source: National Advisory Committee for Aeronautics

Many Advantages — Stainless steel's major advantage in supersonic aircraft is its continued strength at 800°F and up to 1000°F with molybdenum alloys. In addition, it is available in commercial quantities, can be fabricated readily, it's corrosion resistant, and cost is relatively low.

In the B-58, stainless used was subjected to most metalworking processes including brazing, welding, forming, and heat treating. For the Bomarc missile, it was also drawn to make hemispheres.

New Space Agency

All of the nation's peacefully-aimed aerial and space research is officially handed over to the National Aeronautics and Space Administration, successor to the National Advisory Committee for Aeronautics.

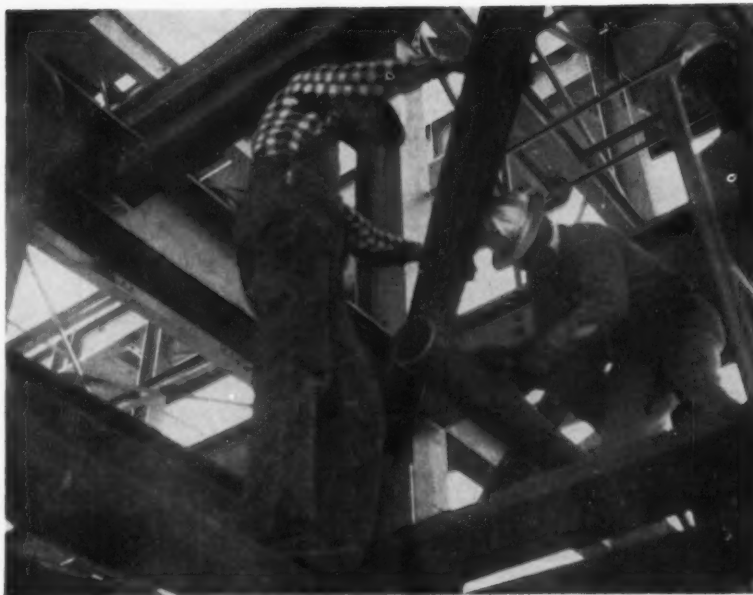
Setup — Nucleus of the new agency will be the present Committee for Aeronautics. The director of the Committee, Dr. Hugh L. Dryden, is the apparent choice to head the NASA. Under his leadership, many current projects, especially in space propulsion, will be broadened and extended.

Some differences of opinion between the NASA and the military as to direction and control of certain research may be inevitable. A liaison group, of civilians and military, is to resolve any squabbles. If the liaison body fails to settle an argument, the President is to make the final decision.

Manganese Auction

General Services Administration has extended the deadline for offers to purchase government-owned, low-grade Mexican manganese ore to August 15.

Any bidder who wants to modify his offer may do so by getting in touch with GSA, Defense Materials Service, Room 7100 R.O.B., 7th and "D" Sts., S.W., Washington, D. C.



BUSY AGAIN: F. H. McGraw workers install piping at Ormet's alumina plant in Burnside, La., as construction industry picks up speed.

New Building Surge

■ Recession holds little meaning for the nation's busy builders. Construction contracts in the U. S. in June reached an all-time monthly peak of \$3.8 billion, F. W. Dodge reports.

This record is 12 pct over the earlier mark set in May, and 18 pct above June, 1957. Bulwarks of the new peak are public utilities, public works, and housing.

Demand for Structurals—Significantly, structural steel orders had their best month so far this year in June. But on a six-month cumulative basis 1958 building contracts are still one pct under the same period last year.

Impact of Government projects showed up markedly in June, with contracts up 30 pct above June, 1957. Private projects also rose a hefty 11 pct. Several large utility contracts—particularly in connection with the St. Lawrence Seaway program—were a major factor in swelling June totals.

Largest of the Dodge categories in June was heavy engineering up 64 pct over the same month a year ago. Public works rose 22 pct, utilities 225 pct, and street and highway contracts 45 pct.

Housing Picture—Contracts for electric light and power zoomed a whopping 479 pct. Pipelines also rang up substantial gains. Housing showed a gain of 20 pct over June, 1957, at \$1.36 billion. Multi-dwelling building showed largest percentage gain at 69 pct. But one and two-family homes—bulk of the housing category—rose 17 pct. Number of dwelling units represented by June contracts were 107,014, up 24 pct from last year.

A sour note was struck by non-residential building, with contracts totaling \$976 million, down 18 pct from June a year ago. Plant construction showed the sharpest decline of 67 pct. Commercial buildings also slipped 27 pct.

Time Runs Out for Autoworkers

Long Stalemate Will Have to End Soon

Although the UAW has surprised in working without a contract, it can't last forever.

Indications are that eventual settlement may be close to a continuation of terms of the 1955 contract.—By H. R. Neal.

■ To date, the automotive Big Three and the United Automobile Workers have managed to amaze each other.

Automakers have stood united in their resistance to UAW demands since contract negotiations began last April. There is no sign of wavering on the part of General

Motors, Ford or Chrysler as they close out their 10th week of operating without a contract. This solidarity is a source of some amazement in union circles—it has never before happened.

Discipline Surprises — On the other hand, the auto companies have been at least mildly surprised at the UAW's ability to keep workers in the plants without serious wildcat strikes upsetting union tactics. The road has been stony, but UAW leaders have moved quickly to quell disturbances in an effort to maintain control over their favorite bargaining weapon—the strike.

Although several hundred new

cars have been "sabotaged" on assembly lines, this vandalism hasn't been as wide-spread as it was at first believed it would be. These displays of united strength are beginning to assume roles of greater importance to negotiators on both sides as contract talks continue to drag.

Changeover Time Looms — The automobile industry is entering the changeover period for 1959 models. From here on a strike could hurt any of the auto companies more than any time since contracts expired. A break in the united front will let UAW president Walter Reuther employ his "whipsaw" tactics of playing one company against the other with the threat of striking or by striking a single firm.

It is also the time when many workers who have been working right along will be laid off for two to six weeks or more. A strike would cancel eligibility for unemployment compensation. The union's strike fund isn't prepared to pay benefits for an extended period to all its Big Three members. And the union isn't sure a strike against one company won't close all three.

Willing to Strike—But there are signs union members are willing to support a strike. There is also evidence workers are willing to accept the auto companies' proposals to extend provisions of the expired contracts for another two years. While officially withdrawn by the companies, they presumably would be reinstated at any show of interest by the UAW.

Tomorrow, the UAW's 25-man executive board will huddle in Detroit and Saturday the national conferences of the union, representing each of the auto industry's Big Three, will also meet there. These meetings may give the tipoff on future strategy.

While UAW Balks, Others Settle

■ While the automakers and the UAW have been conducting their war of nerves, the auto companies have quietly signed contracts with other unions that represent workers in different segments of the industry.

Strictly speaking, these contracts have little bearing on the eventual outcome of the major negotiation. Nevertheless, a pattern is developing, and one favorable to the auto industry.

GM, for example, has signed contracts with eight unions representing 13 bargaining units and several thousands of workers. Ford has settled with nine unions representing about one thousand workers. And Chrysler has reached agreement with several unions.

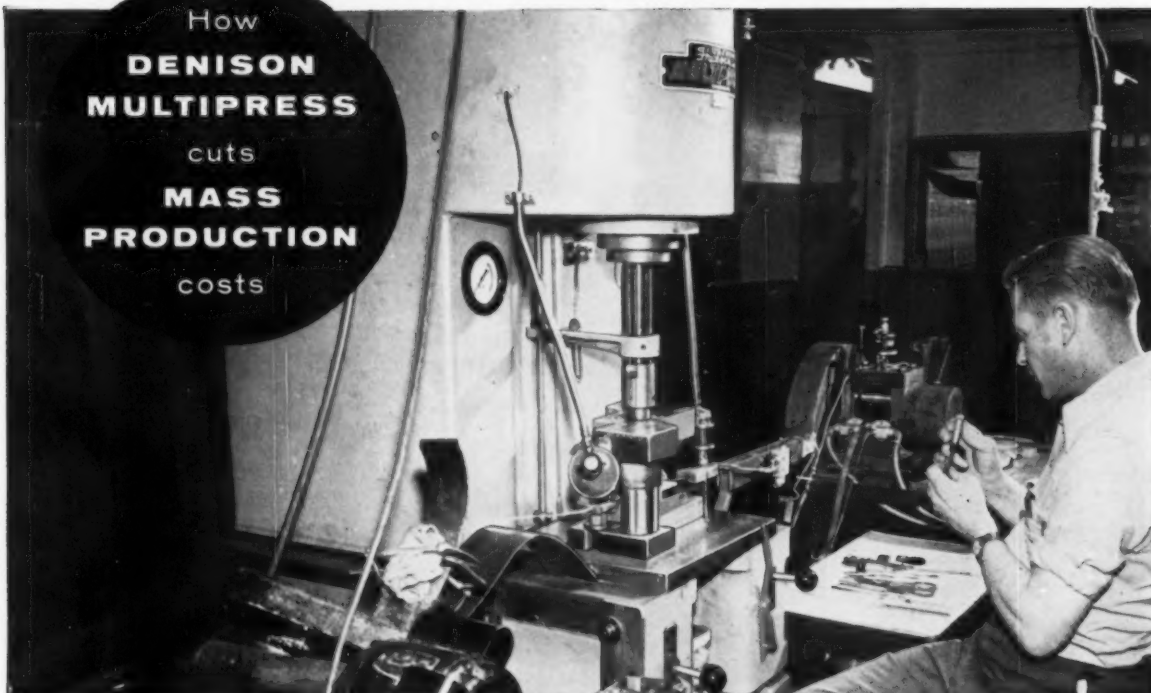
With but one exception, these contracts extend provisions of the

1955 contracts for another two years. The exception is GM's pact with 3000 workers at its Inland Manufacturing Div., Dayton. Employees are members of the United Rubber Workers.

The only change in this contract calls for establishing an Income Security Fund to replace the Supplemental Unemployment Benefits plan. The fund is financed the same as SUB. But contributions are credited to each employee's personal account from which money may be drawn during unemployment. Only the employee or his beneficiary may receive benefits from this account.

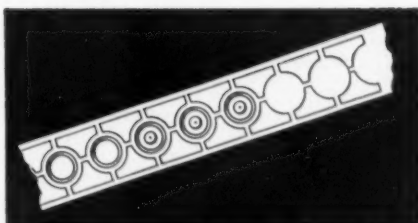
Upon retirement or leaving the company, employees receive the full amount plus any earnings accrued. On death, the amount in the fund goes to the beneficiary.

How
**DENISON
MULTIPRESS**
cuts
**MASS
PRODUCTION**
costs

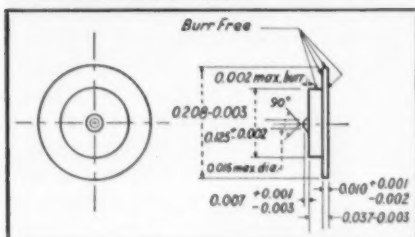


HIGH-SPEED LOW-COST COINING WITH HYDRAULIC MULTIPRESS at Minneapolis-Honeywell. Operating at 225 strokes-per-minute, modified 8-ton Denison Multipress turns out 70,000 magnesium buttons a day. Automatic controls and safety limit switches permit one operator to handle 3 Multipress lines.

How **DENISON** hydraulic Multipress saves cash on high-speed coining for **MINNEAPOLIS-HONEYWELL**



3-STAGE PROGRESSIVE DIE advances strip .4375" with each $\frac{1}{8}$ " Multipress ram stroke. Holes are used for piloting—and for stock advance with hitch feed.



EXTRUDED, COINED AND BLANKED from pure magnesium strip—this button is mass-produced at extremely low cost on Multipress. Stock sizing rolls control thickness of strip fed to die. Denison hydraulic Multipress controlled pressure easily holds necessary precision tolerances.

High-speed coining of small magnesium buttons is normally a mass production job for an automatic screw machine. But, Minneapolis-Honeywell found it could do the job better and faster...save money, too...with Denison hydraulic Multipress.

A modified 8-ton Multipress—equipped with 3-stage progressive die, 6-ton cylinder and special high-speed valves—mass produces about 70,000 of these ordnance-item buttons per 8-hour shift. Coining and blanking the buttons from coiled strip stock with Multipress—instead of using bar stock and a screw machine—cut costs significantly on the operation.

The progressive Multipress die—designed by Minneapolis-Honeywell engineers—has 3 working stations. First station pierces triangular holes which relieve strip and permit proper impact extrusion. Second station extrudes and coins parts to size—but leaves them intact in the strip. Third station blanks parts and moves them through the blanking die into waiting containers.

This is typical of hundreds of jobs that Denison Multipress does today throughout industry...to give users the competitive edge.

Denison hydraulic Multipress means important plus benefits, too—longer tool and die life...less scrap...better quality control...minimum maintenance...greater operator safety.

Isn't it time you got the story on Multipress...complete line from 1 to 75 ton capacities. Call or write your Denison Hydraulic Specialist on your very next job.

DENISON ENGINEERING DIVISION **American Brake Shoe Co.**

1242 Dublin Road • Columbus 16, Ohio

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Conveyor Part of Foundry Mechanization



AT HOME: The conveyor used by a conveyor maker might be expected to be pretty modern. Link-Belt Co., Chicago, calls its setup at its Ewart, Ind., malleable iron foundry "the ultimate in material handling equipment." One feature: Three men standing on a conveyor can pour simultaneously. Speed and direction are synchronized. And before entering cooling rooms, the molds pass through a shifting zone where jackets are removed and transferred to new sand molds headed for pouring.

Chrysler Buys Big Interest in Simca

Chrysler Corp will purchase a substantial interest in Simca, largest non-government owned passenger car manufacturer in France, and one of Europe's foremost producers of diesel trucks, farm tractors, and agricultural equipment.

Chrysler is the last of the major U. S. automakers to acquire a European-built automobile for marketing through its dealer organization.

Ford Out—Included in the purchase is the entire interest of Ford Motor Co. in Simca. Ford said this amounts to 433,973 shares or 15.2 pct of shares outstanding. Purchase price was not revealed, but Simca closed last Thursday on the

American Stock Exchange at \$12.25.

Chrysler President L. L. Colbert pointed out, "This arrangement with Simca is primarily for the purpose of combining the strong overseas organizations of Chrysler and Simca to create a new and major force in the world automotive market."

Output Up — Simca production has increased from 42,000 vehicles in 1951 to 172,000 last year. Production for the first quarter of 1958 totaled 56,000 vehicles, compared with 41,000 a year ago.

This move doesn't rule out possible production of a "North American-type small car" in Chrysler's U. S. and Canadian plants. Reports are that Chrysler's Domestic small car plans are about

one year behind GM and Ford.

The Chrysler announcement said approximately 600 dealers in the U. S. sell the Simca line, and about 40 pct of them are Chrysler Corp. dealers.

Change in Pricing

Kennametal is changing its method of pricing tungsten carbide, effective September 2.

The new approach will generally reduce the price on large quantities, and raise the cost of small quantities.

After September, pricing will follow closely the steel pattern—simple-to-compute base prices, plus uniform extras.

New Furnace Orders

Net new orders for industrial furnaces in June totaled \$3,672,000, up sharply from the low of May, and higher than the first half average of \$2,967,000.

Total new orders in the first half were \$17,802,000 compared to \$43,348,000 in 1957.

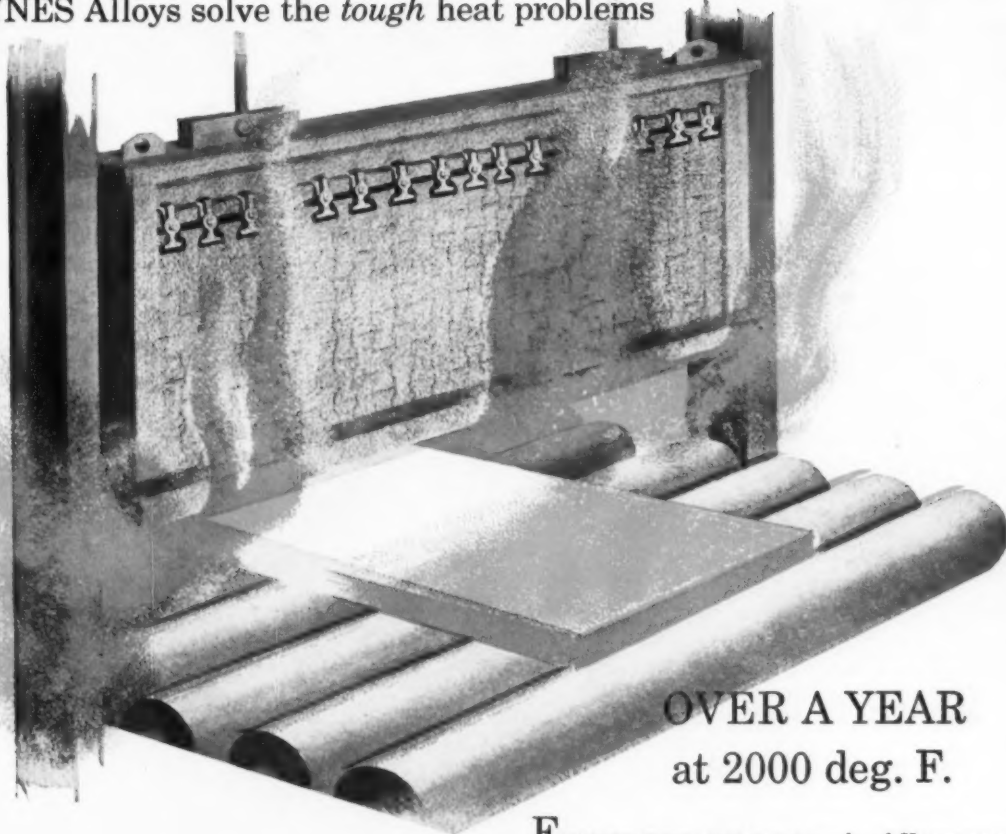
Bill to Aid Railroads

Congress has decided to permit the Interstate Commerce Commission to guarantee up to \$500 million in private loans to the railroads. The funds may be used for capital improvements, equipment buying, and maintenance. Some sizable orders for new equipment should result.

ICC also is empowered to halt rail service on runs crossing state lines. The agency will first have to find that discontinuance will satisfy "public convenience and necessity." A single train may be removed from service under the new ICC authority, while other service on the same line continues.

State regulatory bodies are to keep control over service entirely within their borders. However, a railroad now may appeal to ICC to halt a given run if the state agency rejects the carrier's request, or fails to act within 120 days.

HAYNES Alloys solve the *tough* heat problems



OVER A YEAR
at 2000 deg. F.

FURNACE DOOR HANGERS made of HASTELLOY alloy X are nearing completion of their second year of service, where ordinary hangers failed in three to four weeks. They support the interlocking firebrick of the doors and are exposed to the direct impingement from the 2150 deg. F. furnace flame and reducing or oxidizing atmospheres.

This is another example how HAYNES alloys serve the metalworking industries . . . by providing parts that are strong at high temperature. If you have a maintenance or production problem involving temperatures in the 1000 to 2100 deg. F. range, contact HAYNES STELLITE COMPANY, Division of Union Carbide Corporation, General Offices and Works, Kokomo, Indiana. Sales Offices in Chicago, Cleveland, Detroit, Houston, Los Angeles, New York and San Francisco.

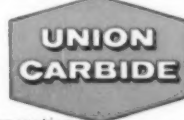


Hangers must maintain firm grip . . . to prevent fire-brick from crumbling. After 5 weeks of operation here's what happened to the hangers—the four on the left are made of HASTELLOY alloy X, the others are not.

HAYNES
ALLOYS

HAYNES STELLITE COMPANY

Division of Union Carbide Corporation
Kokomo, Indiana



"Haynes," "Hastelloy" and "Union Carbide" are registered trade-marks of Union Carbide Corporation.



How To Take The Cool From The Pool With Bridgeport Brass and Copper

A back-yard swimming pool is great fun but often the season seems too short. Today, with a pool heater, you can extend the pleasure of the swimming season from early spring to late fall. One of the leading units of this type is the M/E Universal Heater which supplies automatic instant heat to pool water. The manufacturers, McIntyre Engineering Co., of San Francisco, rely on Bridgeport metals for greater efficiency and dependability in their product.

The M/E Universal is a gas-fired instant heat boiler which keeps swimming pool temperatures at a comfortable 76°. Forming the unit's combustion chamber is Bridgeport copper sheet. Water circulates around the chamber through $\frac{5}{8}$ " soft temper Bridgeport

copper tube brazed to the sheet, and into a fin-and-tube copper coil at the top.

Copper, of course, is a natural for this kind of equipment. Its resistance to corrosion and excellent thermal conductivity make it especially desirable where heat and moisture are factors. Pool heaters are only one application in which brass and copper perform as no other metal can.

Bridgeport supplies high-quality brass, copper and bronze in a wide range of alloys and forms. Call your nearest Bridgeport Sales Office for help with your product and production needs, or wire us directly at the address below.



BRIDGEPORT BRASS

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Henry Marx

A Tool Man's First 100 Years

In 1858, when the machine tool industry was very young, Henry Marx was born.

Today he is board chairman of G. A. Gray Co., and the industry's senior citizen.

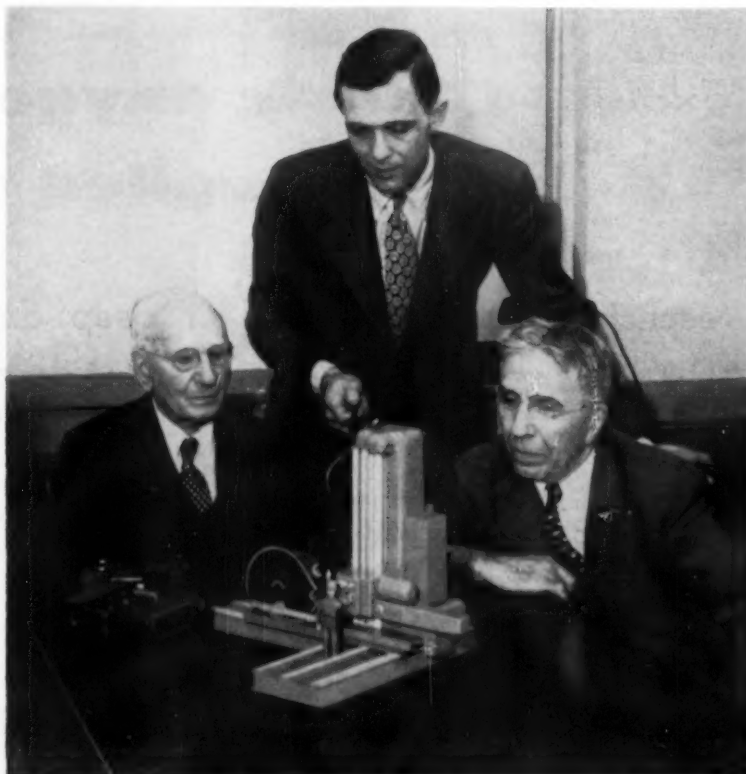
■ It hardly seems possible that a man who remembers Lincoln's assassination, who with Thomas Edison, Ambrose Swasey, and a small group of engineers organized the American Society of Mechanical Engineers in 1880, would still be interested in machine tools today. Yet that's the case with 100-year-old Henry Marx.

He thirsts for information of new developments at his firm, G. A. Gray Co. of Cincinnati, even though his life must necessarily center about his home.

Grew With the Nation—Henry Marx was born June 22, 1858, at Toledo, O. It was the year Theodore Roosevelt was born, Minnesota was admitted to the Union, George M. Pullman invented the sleeping car, and Cyrus Field laid the first transatlantic cable.

While the Civil War and history were unfolding, young Henry Marx attended public schools in Toledo. From 1872 to 1876, he studied at Karlsruhe, Germany, and returned to get his mechanical engineer's degree from Cornell University in 1879.

His Work History—Finished with his formal education, Mr. Marx went to work in machine shops for three years. Then in 1882, he joined Hill-Clarke and Co. as a salesman, became manager of the firm's St. Louis office before leav-



HENRY MARX: (left) If you stand still you go backwards.

ing in 1889 to take over as sales manager for G. A. Gray Co.

During the next 16 years, his standards of honesty and integrity in the marketing of Gray planers, milling, and boring machines, helped set the company's course for the next 68 years. In 1905, he was elected president of G. A. Gray. He led the company through five expansion programs in the years following. In 1952, at age 94, he was elected chairman of the board.

All for Progress—One of Mr. Marx' unusual characteristics is his apparent disinterest in the past and his concern with the present and

future. When the company was considering its latest expansion, management sought Mr. Marx' counsel. His advice: "Go ahead. If you stand still you go backwards."

Life's Secret—Mr. Marx feels that retirement is more a matter of mental attitude than age. His formula for longevity is summed up by his brother, August, who currently is president of G. A. Gray:

"Whenever anyone asks him how he got to be so old, how he kept working so long, Henry always tells them 'Just keep breathing, that's all.'"

NEW

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STRIP STEEL DIVISION

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exclusive

basic oxygen steel cold rolled strip

especially advantageous for deep drawing requirements

High purity, ductile, Basic Oxygen Steel is now available for the first time in restricted specification cold rolled strip. Low phosphorous, sulphur and nitrogen content characterize this new product. The combination of this high quality low carbon steel and the controlled processing typical of J&L's Restricted Specification Strip, results in a new product

with many fabricating advantages. For deep drawing and intricate forming operations, superior yields and lower costs may be anticipated. The extent to which this new product may benefit your product deserves immediate investigation. Your inquiry will receive our prompt and interested attention.

J&L STRIP STEEL DIVISION produces a full line of restricted and standard specification strip steel in these grades and types:

Low Carbon
High Carbon
Tempered Spring Steel
Molten Zinc Coated (JalZinc)
Electrolytic Zinc, Tin, Copper
and Brass Coated
Alloy
Stainless
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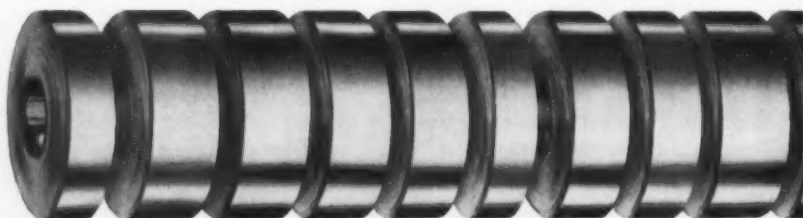
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Will New Cars Speed Recovery?

A lot is at stake in the new cars now being shown off in traditional previews.

Automakers have lost some of their traditional over-optimism, but still look for a good year. New cars are impressive.

■ Something to keep an eye on in the weeks ahead is the series of auto press previews that precedes the introduction of new models.

If you read between the lines, and interpret what the automakers say at these debuts, you can get a pretty good idea of what to expect from Detroit in the next 10 or 12 months.

Realistic Predictions—The new cars, of course, won't be out for another month and a half. But the division or company heads generally use this occasion to make their predictions of industry sales. And enough details of the new cars are leaked to give you an idea of possible sales reception.

You can be sure of one thing this year. Automakers' predictions are going to be a little more on the realistic side than has been the custom.

Over 5 Million—Any auto executive would still be blackballed from the Detroit Athletic Club for pessimism. But their overly-optimistic predictions of the past few years haven't helped create sales.

Last week Edward Ragsdale, Buick general manager, predicted industry sales of 5,250,000 to 5,500,000 in the 1959 model year (p. 56). A year or two ago he would have been shunned for making such a conservative prediction.

Steady Upturn—What it probably means is he expects industry sales to

be about five million, with Buick, on the basis of a completely restyled car, regaining some of the market share it lost in the past two years.

Apparently the auto industry is now reconciled to a market of about that level for several years, and looks for a steady upturn on the basis of population trends rather than any sudden bulge like that of 1955. For comparison, 1958 sales will run about 4.8 million, a very disappointing figure.

Cars Look Good—If your business doesn't get you behind the

scenes in the auto industry, you may be interested to know that the new Buick, and others, are impressive, as new cars go. Automakers are still stuck with the longer-lower styling philosophy, but they have put a lot of money and effort into the new cars.

Of course, styling isn't everything and no one has ever come up with a proven theory of what makes a good model year. But a lot of the speed and strength of the recovery depends on how the new cars go. It will pay you to watch these trends as they develop.

Manufacturers Orders Gain Momentum

It's Confirmed—Latest Dept. of Commerce figures confirm the uptrend that was apparent to most metalworkers by mid-June.

June manufacturers orders were up significantly, with the improvement centered in the durable goods area. New orders for durable goods, seasonally adjusted, reached \$11.7 billion in June, compared with \$11.4 in May.

Inventories Still Drop—Although orders are still far below the level of the recent boom, the increase is encouraging. Rate of new orders is the key indicator and the uptrend here means improved production in subsequent months.

Inventories continue to slide and probably will for some time, even though the trend is toward rebuilding, not curtailing. There is a time lag, for one thing, and, in the face of improved production, accelerated buying is not immediately reflected in larger inventories.

This is another reason for improved confidence, particularly in

the primary metals field. Inventory rebuilding is not a one week or even a one month shot. The effects of rebuilding tend to multiply on the plus side just as effects of inventory curtailing multiply on the negative.

Capital Goods Outlook Improves

The big question mark, or at least the one remaining gap in the improvement picture, is the capital goods sector of the economy. Even here, in spite of the general tendency to curtail capital goods spending, there is some encouragement.

The Mideast crisis, even if it does not deteriorate, served as a reminder that things can happen that could change the picture over night.

The result is less of a tendency to postpone major purchases as has been the case. No major capital goods upsurge is in sight, but business will tend to replace and improve, not delay.

Longer Life from Coated Mufflers

They'll Save Wear and Tear on Temper and Wallet

Additives in higher octane gas reduce the life of steel mufflers.

Aluminized steel has been around for years, but automakers have just decided this is the answer.—By H. R. Neal.

■ One of the biggest irritants to auto owners, the quick-to-blow-out muffler, may be on the way out.

It looks like buyers of many 1959 cars will find a coated muffler on their new pride and joy. It means longer muffler life and significant savings to anyone who keeps his car more than one model year.

Why Mufflers Wear — Why do

mufflers seem to wear out faster these days? Automakers say today's high compression engines require high octane fuels loaded with additives. These create corrosive exhaust gases which disintegrate mufflers in a twinkling.

In the past 10 years, average muffler life has dropped from about 30 months to about 18 months. In the case of some dual exhaust systems it is even less.

Cost Up — Replacement costs have risen sharply, too. Some dual exhaust systems have two each of mufflers and resonators — small muffler-type sound chambers. These can run well over \$100.

Condensates in the exhaust system now contain at least a half-dozen acids, including sulphuric and hydrochloric, with sufficient strength to eat through steel over a period of months. Ten years ago, engineers say, this same condensate was about as strong as vinegar and harmless.

Scientific Control Laboratories, Chicago, has developed a simple "accelerated wear test," for Maremont Automotive products, to show the superiority of coated muffler steel over uncoated cold-rolled steel.

Result in a Jiffy — In a matter of seconds it approximates high temperatures present in exhaust systems under normal driving conditions, as well as the acidity accumulated over a period of months.

Strips of coated and uncoated steel are set over a small alcohol burner. About eight drops of exhaust condensate are placed on each strip. Four drops of hydrogen peroxide are added to speed up reaction of acid with the steel. In seconds the uncoated material has started to rust and pit; the coated material is virtually unharmed.

Maremont says its galvanized steel mufflers will last about twice as long as uncoated steel. Previous types of zinc coating often proved unsatisfactory, due to flaking. But the use of a small amount of aluminum in the coating prevents this.

Not New — The merits of coated steels over uncoated materials for mufflers have been known to the industry for a number of years. One steel producer, Armco Steel Corp., has been prodding the industry for years to use its aluminized steel in mufflers. Aluminized steel has been available for around 20 yrs, but

1959 Models: A Look at the New Buick

Early Start — The 1959 auto press preview season got off to an early start last week with Buick offering advance glimpses of the car general manager Ed Ragsdale hopes will spark a sales comeback.

Making a radical departure from previous styling concepts, the General Motors division has come up with a car that defies comparison with past Buicks.

Revolutionary Changes — While details of the new model are still restricted, Mr. Ragsdale called it "the most revolutionary change Buick ever made."

The public will have to be the judge, but the cars are longer, lower, with crisp, clean lines. Ornamentation is used for one purpose, to emphasize the lines of the car.

Two-Tone Is Dead — Two-tone color combinations, once the rage of Detroit, are out, along with the

bulky look of previous years. The only two-toning offered is the option of a white top.

Buick's four lines have been consolidated into three. Gone are the names Century, Roadmaster, Special and Super. The lowest priced car is now the LeSabre, followed by the Invicta and the Electra.

Conservative Prediction — Production of 1959's will start Aug. 18 and the rate will be 1500 a day, but this can be accelerated if demand dictates.

This moderate schedule is an indication automakers are taking a more conservative approach to the market than has been the practice. Buick, now in fifth place in auto sales, is shooting for fourth place.

Mr. Ragsdale's industry prediction: A conservative 5,250,000 to 5,500,000 output for the 1959 model year.

Automatic Positioning

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Production Costs with

BULLARD

H. B. M.

MODEL 75



The experience of George Hantscho Company, Inc., Mount Vernon, New York, builders of equipment for the printing industry, is typical of that enjoyed by users of Bullard H.B.M., Model 75.

THE PROBLEM

To bore 105 holes, from 5" to $\frac{1}{2}$ " in diameter, in both side frames of paper folding machine to support rollers, gears and folding cylinders. Some holes must be aligned vertically and others horizontally.

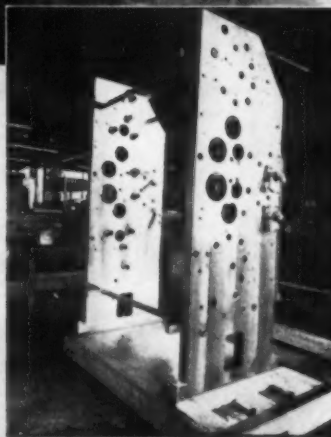
THE SOLUTION

Mount pair of side frames, $\frac{1}{2}$ " apart, on table of 4" Bullard H.B.M., Model 75, equipped with automatic table and head positioning. Bore all holes of the same size beginning with the largest and working down to the smallest.

THE ADVANTAGES

All related holes in perfect alignment — no spoilage. Less tool change-over time.

Eliminate hand measurements and templates for hole location. Accurate automatic hole location within a tolerance of $\pm .0004$ ". Ease of operation from Pendant Control — less operator fatigue. Overall boring time reduced 25% over previous method.



Partially assembled side frames ready for ink rollers, gears and printing cylinders.

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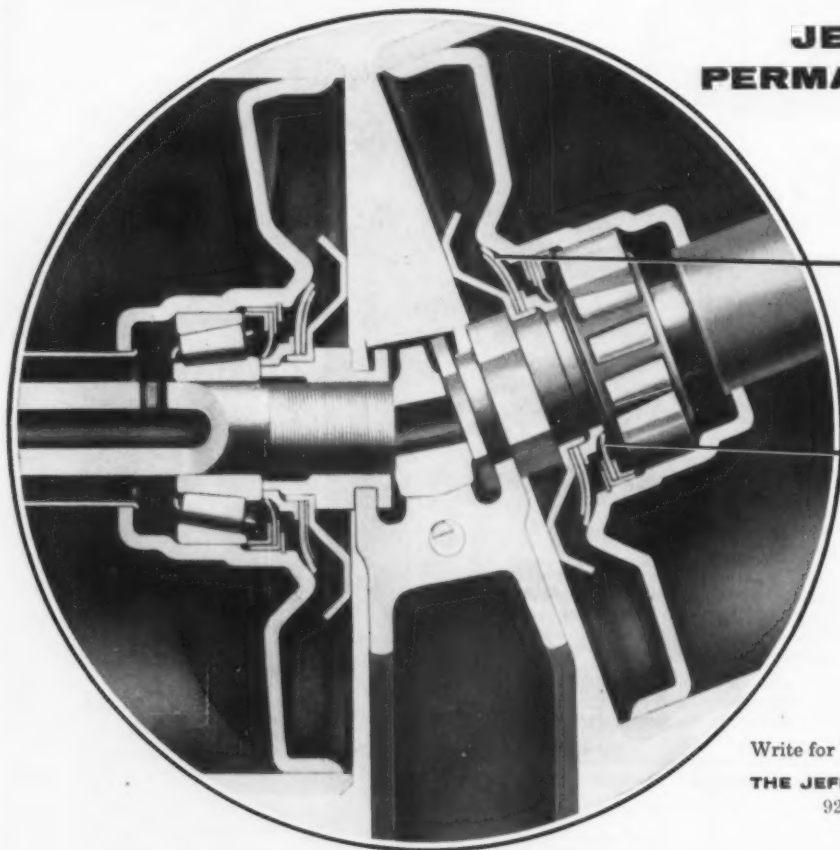
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JEFFREY

Automotive Production

WEEK ENDING	CARS	TRUCKS
Aug. 2, 1958	61,808	17,261
July 26, 1958	85,519	16,570
Aug. 3, 1957	119,323	20,833
July 28, 1957	119,857	21,798
TO DATE 1958	2,574,566	517,141
TO DATE 1957	3,913,043	681,313

*Preliminary

Source: Ward's Reports

never created much of a stir among automakers until this year.

Armco conducted in-service tests of aluminized steel mufflers starting in 1948. When tests were concluded on Jan. 1, 1955, Armco had amassed some pretty convincing evidence of the superiority of coated steels over uncoated—even before the advent of today's high octane, additive-loaded gasolines.

Shorter Life—Average life of cold rolled steel mufflers: 29.3 months. Average life of aluminized steel mufflers: 42.2 months. But some 63 pct of the aluminum-coated mufflers were still in service. Further tests showed their average life expectancy was actually about 58.0 months.

The steel firm probably isn't willing to predict as high a life expectancy for aluminized steel mufflers today, due to the changes in fuel composition and compression ratios. Conservatively, it claims the life expectancy has been doubled.

Fat Market—Armco Steel Corp. finds itself in an enviable position. After years of trying to interest automakers and muffler manufacturers in the advantages of its aluminized steel, it's suddenly confronted with a situation where it can't supply the demand. Customers have been placed on an allotment basis.

Sears Roebuck and Co. has offered aluminized steel mufflers for a number of years. Current price for a regular muffler for a 1957 Ford V8 is \$7.79; for the aluminized steel muffler \$9.69. Considering the added life, the difference is small but the long-run savings to the buyer is considerable. Sears is

reported to be seeking to add a line of aluminized tailpipes, but the sudden shortage of material might stall this for a time.

Penny-conscious automakers apparently balked for years at higher costs for mufflers made of aluminized steel. But one source indicates a muffler made of aluminized steel will cost only about 60¢ more than one of cold rolled steel for a low-priced, volume car.

Who—Two major automobile manufacturers decided to use aluminized steel mufflers in all their 1959 cars. Ford Motor Co. and Chrysler Corp. each wanted their entire mufflers and tailpipes made of aluminized steel. For now, they'll have to settle for insides of aluminized steel and outsides of galvanized steel. Armco is still the only producer, although U. S. Steel has been licensed and is expected to be in production early next year.

Ford will use galvanized tailpipes. It isn't known whether Chrysler will follow suit. Buick, for several years now, has had an aluminized steel tailpipe, and Pontiac

has used mufflers with some parts made of the same material.

First—Dodge is expected to be the only production car with an all-aluminized steel muffler, having reached its supplier ahead of the others.

Although of seemingly small importance, the sudden acceptance of coated materials for mufflers by major automakers represents a major breakthrough on three fronts—by Armco, by muffler manufacturers and by customers who have been wondering why their mufflers have been melting away.

GM Cuts Charges

General Motors reduced destination charges on all of its passenger cars and trucks effective with shipment to dealers and distributors on Aug. 1. GM said the lower charges "are the result of repeal by Congress of the Federal 3 pct excise tax on transportation," which also went into effect on that date. Other automakers are expected to follow.

THE BULL OF THE WOODS



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New CINCINNATI No. 1D Toolmaster Milling Machine. Catalog No. M-2017. Other styles: 1A, 1B and 1C; catalog No. M-1870-4.

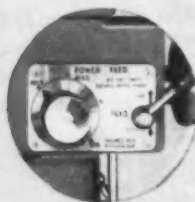
Hundreds of CINCINNATI Toolmaster Milling Machines — the familiar 1A, 1B and 1C styles — are giving an excellent account of themselves in shops throughout the country. And now the new 1D Toolmaster extends the versatility of this fine family of machine tools still further. Exclusive 1D features and advantages include:

Infinitely variable spindle speeds, 100-3800 rpm

Instant selection of spindle speeds . . . through a control lever on front of the spindle head

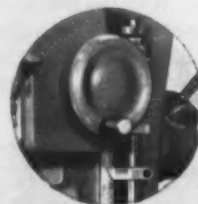
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Spindle speeds are changed instantly. Merely select the high or low range and then rotate this control lever to the speed desired. Speeds are dial indicated.



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Quill feed hand-wheel, mounted on front of the spindle head, advances the quill in fine feed progression. A lever on the right-hand side quickly advances or retracts the quill.



No. 40 standard taper hole in spindle . . . and positive key drive for arbors and collets

Power quill feed (extra) . . . up and down; three feed rates; power trip-out

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Defense Dept. Turns Down Cash!

Top Brass Has All the Money That's Needed

Defense Dept. says it has all the funds needed to meet current needs.

It's a new twist for the usually money-hungry military not to ask for more.—By G. H. Baker.

▪ Despite congressional criticism of the Pentagon's fat complacency, military chiefs have no plans for increasing procurement of weapons or supplies.

The military chiefs of staff insist they have enough planes, tanks, and guns on hand to fight either an all-out war or a limited war. And orders now being filled for planes, missiles, rockets, and other weapons won't be stepped up because "we can't absorb any more," the generals and admirals state.

Prefer Foreign Aid—When asked recently in a congressional hearing if extra dollars would help the defense program, both Defense Secretary McElroy and Gen. Twining, chairman of the joint chiefs of staff, declared they'd rather have any extra funds turned over to the foreign aid program.

Here we have the unusual political situation of government officials turning down offers of more money. What this development means is that the military chiefs are able to absorb—at this time—not more than \$40 billion a year to pay all their procurement bills and meet their payrolls.

Renegotiation Extended

The government's right to renegotiate defense contracts is gradually becoming a permanent Washington operation. The Administration wants its authority to re-

negotiate contracts extended for two more years beyond the expiration date of December 31, 1958. Both houses of Congress are in substantial agreement. Little or no opposition to the extension is heard.

Lower Rates On "Tie-Lines"

If you lease long-distance telephone lines from the A.T.&T., you can count on paying 15 pct less for this service, starting August 24. The A.T.&T. had protested the reduction, which was ordered by the Federal Communications Commission, but the government overrode the protest and ordered the lower rates put into effect as scheduled.

The lower rates apply to service commonly referred to as "tie-lines"

(long-distance lines leased for long periods of time, permanently tying together the switchboards or telephones of branch operations with a firm's head office).

New Ruling Asked On Defense Renting

Defense contractors and subcontractors who rent government-owned facilities should not be permitted to include such rent in calculating their costs under negotiated contracts, according to the U. S. Comptroller General.

In a new report to the Congress, Comptroller General Joseph Campbell says some defense contractors are running up their total contract costs by improperly adding in rent paid on government facilities.

Stockpile Losses Grow and Grow

Up to \$300 Million — Federal stockpile programs are involving some government agencies in embarrassing red-ink bookkeeping.

Three federal agencies report their aggregate operating losses, plus expenses, amount to about \$300 million. This situation has led them to request Congress for permission to write off the losses.

Within Limits — Spokesmen for the agencies in this recent plea were John S. Patterson, deputy director, Office of Defense and Civilian Mobilization, and Franklin G. Floete, General Services Administrator. They told the Senate Banking Committee the writeoff is needed to prevent the stockpiling agencies from exceeding their borrowing limit.

Agencies involved are the GSA and the Agriculture and Interior Departments. Largest operating and expense loss, figured at more than \$204 million since 1950, is that of GSA. The Agriculture Dept. loss is about \$62 million. Interior Dept. is in the red by some \$32 million, primarily on contributions to exploration projects.

Where It Hits—Through the end of March, GSA losses came to nearly \$198 million. Estimated loss between Mar. 31 and June 30 was \$7 million. Figuring importantly in this deficit operation are losses on columbium - tantalum, magnesium, tungsten, and zinc bought for the \$7.7 billion strategic stockpile.



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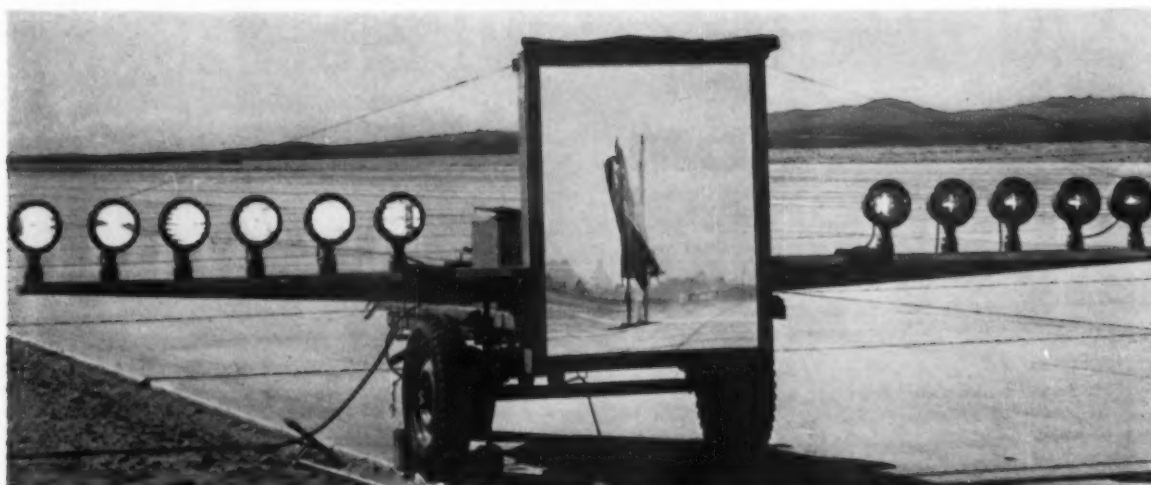
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on-the-job service...**



LANDING TEST: This is mirror view of landing of Air Force F-102A jet interceptor. Pilot sees only ball

of light from lights focused on mirror. It helps guide down Convair plane in landing gear tests.

Aircraft Industry Will Shrink

Planemaking will remain backbone of Farwest's aircraft industry for a few years.

But as swing to missilemaking grows, manpower needs will lessen.—By R. R. Kay.

■ Aircraft manufacturers have a bitter pill to swallow—their industry is shrinking.

Why? Missiles are smaller—they take less space to build and they need fewer workers.

Missiles have a high sale price per pound. But Donald W. Douglas, Jr., president of Douglas Aircraft, says they take 30 pct less man-years of labor for the same dollar volume of airplane sales.

One for One Ratio—At Convair one engineer kept ten production workers going on its F-102 all-weather interceptor. But the company is figuring on only one production worker per engineer for its Atlas ICBM.

Planemaking will certainly re-

main the backbone of the Coast's aircraft industry for several years. But the big push for missiles is on.

More missiles and fewer aircraft is the order of the day. It's quite true that most missiles are still in the research and development area. But that won't be for long. Reason: The industry is making seven-league strides in science and technology. In just a few years missile manufacture will rocket.

Missile Outlays Rising —An IRON AGE check shows that some planemakers already have as much as 50 pct of their military backlog in missiles. Half of the military budget dollar goes to West Coast companies. Today about 35 pct of the USAF money is spent on missiles. Pentagon planners say it will be 50 pct next year. Army and Navy outlays will rise, too. So far the Mideast crisis hasn't brought new orders. And none are looked for at the moment.

Planes Not Yet Dead—But here's

how the immediate outlook for the planemakers stacks up. The military says it's figuring on at least two more generations of manned aircraft. And you have USAF Lt. Gen. C. S. Irvine's word for it. He's Deputy Chief of Staff-Materiel.

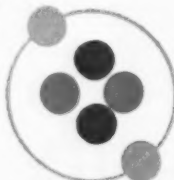
The General insists that there will be another family of manned aircraft after North American Aviation's B-70 "chemical bomber" and the F-108 long range fighter. Both of these craft are in the Mach 3 class—three times the speed of sound. It will be 1962-63 before they'll fly. And there's talk that the USAF is planning a Mach 4 bomber.

Missile Plant Ready

Pilot production on the Atlas ICBM is now underway at the new \$40 million plant of Convair Astronautics at San Diego. The 1.2 million-sq-ft facility is designed for the production of long-range missiles. It will ultimately have a working force of seventy-five hundred.

FROM STORAGE TANK TO GUIDED MISSILE

AT MINUS
452 DEGREES



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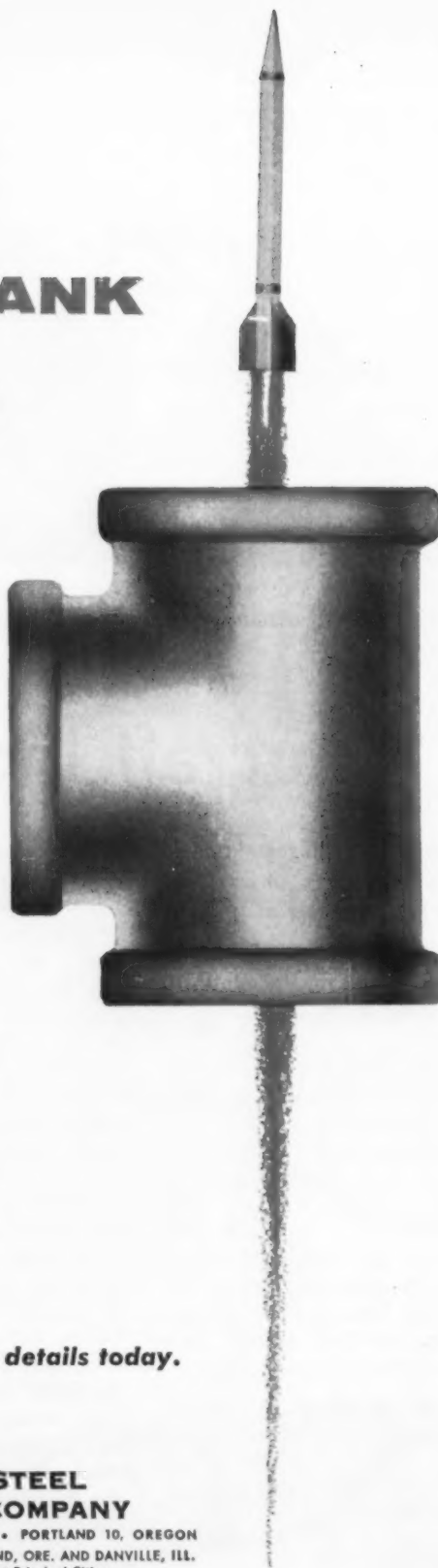
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Taxes Help Reds Outpace U. S.

Economist Calls for Tax Depreciation Reform

MAPI's Terborgh says depreciation laws are handicapping U. S. industry.

He urges further liberalization of tax policy on a permanent basis.—By E. J. Egan, Jr.

■ Are the Government's tax depreciation policies helping the Russian drive to win industrial and military supremacy over us? The Machinery & Allied Products Institute thinks so.

MAPI rings the national-security alarm bell hard in a new booklet titled "The Tax Depreciation Problem." Its author: MAPI research director George Terborgh.

Why Reds Move Fast—To set the scene, Terborgh says, "the dollars in which depreciation is taken are now generally smaller than the dollars of investment." He figures the annual deficiency of historical-cost depreciation at about \$6 billion compared to the current-dollar equivalent.

The annual shortage of funds to buy new equipment puts the brake on industrial growth, the booklet contends. By contrast, the Russians are expanding and improving production facilities at twice the U. S. rate.

Incentive Needed — "If the Soviet Union can manage to outpace us so dramatically for another decade," the booklet argues, "it will be hard to convince even our friends that the Communist economic system is not the wave of the future."

"The moral for the U. S. is obvious," it continues. "If we hope to step up our rate of progress to

something nearer the Soviet tempo, we . . . have to provide both the financial wherewithal and the incentive for a higher rate of productive investment."

Tax Relief Urged — Terborgh urges a further liberalization of tax depreciation policy on a permanent basis. He explores two ways to do it. One system would abandon the original-cost basis or a higher basis adjusted to the effects of inflation. The other would adhere to the original-cost basis but speed up recovery of the original cost.

Terborgh favors some form of speed-up. He says: "The history of inflation in this country over the past 25 years indicates that such a speed-up would have required a declining-balance writeoff between 3 and 4 times the straight-line rate.

A Step Forward—"We suggest at least a triple declining-balance writeoff, or, alternatively, an initial allowance of the British type sufficient, with a double-rate writeoff, to accomplish a like result."

The House of Representatives recently passed a bill which is a small step toward what MAPI proposes (The IRON AGE, July 31, p. 23). Allowing firms to write off 20 pct of a \$10,000 equipment purchase in the first year, it's aimed at helping small business. With its low ceiling, however, it falls far short of compensating for MAPI's estimated annual depreciation deficit of \$6 billion.

Terborgh says the \$6 billion loss "is an indefensible drag on the national economy." And he's sure that a big Government study is needed to solve the problem.

GEAR INDEX 1957/1958

Base 1947—49=100

	0	50	100	150	200	250	300	
JUL 57								211.4
AUG								225.8
SEP								174.9
OCT								207.3
NOV								165.3
DEC								150.8
JAN 58								175.4
FEB								179.1
MAR								173.7
APR								153.2
MAY								142.2
JUN								173.8

Source: American Gear Manufacturers Assn.

INDUSTRIAL BRIEFS

Rare Metals Bulletin — Stauffer Chemical Co., New York, will build a semi-works plant to produce tantalum and columbium pentachlorides at its research laboratories, Richmond, Calif. The aim is to supply large quantities of the two chlorides as feed material for the tantalum and columbium metals industry.

In Good Standing—C.I.T. Corp., New York, has become an associate member of the Material Handling Institute, Inc.

French Cousin—J. I. Case International, S. A., a wholly owned subsidiary of J. I. Case Co., Racine, Wis., has acquired a majority stock interest in Societe Francaise Vierzoon, one of the oldest French tractor manufacturers, with headquarters about 100 miles outside of Paris.

Keeping Up With the Times—Bryant Computer Products Div. is the new name of the former Bryant Gage and Spindle Div. of Bryant Chucking Grinder Co., Springfield, Vt. The division is now making magnetic storage devices for electronic computers exclusively.



"Hello, Chief. I have a local and an express standing by."

U. S. Still Popular—Since the United States entered its first official exhibit at an International Fair, in Bangkok December 1954, more than 45 million people in 25 countries have seen U. S. displays, estimates Walter S. Shafer, Director, Office of International Trade Fairs, Dept. of Commerce.

Busy Beaver—Beaver Precision Products Inc., Clawson, Mich., and Armstrong-Siddeley Motors, Ltd., Coventry, England, have agreed to cooperate in a complete interchange of technical information and manufacturing techniques for ball screws, ways, and splines. The American concern intends to set up a new division, Beaver Products Div., in Coventry, under the wing of Armstrong-Siddeley.

Pressing Westward—SPS Western, a recently created branch of Standard Pressed Steel Co., Jenkintown, Pa., has begun production of steel shop and office equipment in its new \$15 million plant in Santa Ana, Calif.

Aliquippa Pipeline—Jones and Laughlin Steel Corp., Pittsburgh, adopted "Jal-Con-Weld" as the trade name for the pipe manufactured on its two continuous weld pipe mills at its Aliquippa, Pa., works. Welded pipe in a nominal size range from ½ through four inches is produced by the two mills.

Rolling Along—Metals Research and Development, Inc., Exeter, Pa., is expanding fabricating facilities by adding a new pilot plant for metal powder rolling.

Boston R & D Party—The New England Council, Statler Building, Boston, will hold a conference on research and development, both technical and market, on October 15 and 16 at the Somerset Hotel, Boston. It is to be aimed particularly at small companies.

Best Seller—A revised edition of "Selling to AEC" is now available from the U. S. Government Printing Office. The 34-page booklet briefly describes the commission's procure-

ment program, types of services and items it purchases, and gives names of agencies and individuals in charge of the purchasing. It costs 25¢.

North of the Border—Federal Pacific Electric Co., Newark, N. J., acquired all the outstanding stock of Federal Pacific Mfg. Co., Toronto, Canada. For the last six years the Canadian company has been operating as a licensee of the American firm. The move indicates a broadening of Federal Pacific Electric's activities on both sides of the border, says company president, T. M. Cole.

On Location—"One Hoe for Makwanga" is a movie now being made for the National Machine Tool Builders' Assn., to tell the story of machine tools to the general public. Part of the flicker will be filmed on location at the village of Makwanga in Africa.

Tops in His Field—The American Society of Mechanical Engineers' medal for distinguished service in engineering and science has been awarded to Wilbur Hering Armacost, vice president-consultant and chairman of the technical committee, Combustion Engineering, Inc., New York.

Buys Ohio—Consolidated Iron-Steel Mfg. Co., Cleveland, has acquired the plant, machinery and inventory of The Ohio Foundry Co., Cleveland. The acquired firm's light foundry will be combined with Consolidated's Taylor & Boggis Div. in turning out a full line of light weight castings. The remainder will become the Ohio Foundry Div. of Consolidated.

Quarter Century Mark—Angus J. Johnston completed 25 years as president, Hickman-Williams & Co., Chicago. It's his 45th with the firm.

Room for Research—On July 22, Hubbard & Co. had its formal opening of its Electrical Research Laboratory. The laboratory is in McCook, Ill., a suburb southwest of Chicago.



SQUEEZE PLAY FAILS TO SCORE AGAINST WEIRKOTE®

Crun-n-n-ch!

For brutal, iron-jawed pressure, a steam shovel has few equals. Here, in this crushing grip, Weirkote's zinc coating undergoes a murderous test.

Yet at every crease, at every tortured angle of this crumpled mass, the zinc remains an integral part of the steel. There is not one sign of flaking anywhere!

No wonder strenuous forming operations such as lock seaming are child's play, for Weirkote can be worked to the very limits of the steel itself!

No wonder parts fabricated from it require no painting, plating or redipping to guard against corrosion. Weirkote parts can be stamped, drawn or spun well in advance of use, and stored without danger of rust.

And NOW, Weirkote is treated to inhibit wet storage (white oxide) stain.

Why not find out what Weirkote's benefits can mean to you?

Free Weirkote Booklet! Send for all the facts on Weirkote. Write Weirton Steel Company, Dept. A-6, Weirton, West Virginia



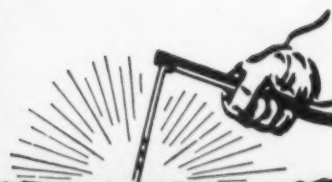
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ARC WELDING AT WORK CUTTING COSTS

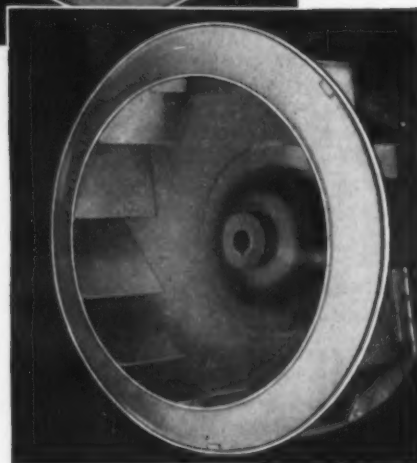
Switch from cast iron to welded steel saves 61% on blower hubs

Because steel is 3 times stronger, $2\frac{1}{2}$ times more rigid and costs $\frac{1}{2}$ as much as cast iron a blower manufacturer was able to cut costs of blower hubs 61%.

Additional advantages of welded steel are:

- 42% lighter permitting use of lighter bearings and shafts
- Higher maximum speeds—no danger of fracture
- Easier balancing
- Better appearance

Your product can be made better at less cost with welded Steel. A Lincoln man trained in Weldynamics will help you. Call or write.



DESIGN AIDS!

"Procedure Handbook of Arc Welding Design and Practice" new 11th edition has 1300 pages, 1100 illustrations, 240 pages on Machine Design. \$3.00 postpaid in U.S.A., \$3.50 elsewhere. Send for Machine "Design Ideas", free to engineers and supervisors.

Machine Design Seminars, conducted at our Cleveland Plant.

(Top) Blower rotor with cast iron hub attached by rivets.

(Bottom) Same size rotor with welded and spun steel hub attached by intermittent welds.

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of Arc Welding Equipment*



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MEN IN METALWORKING



J. E. Jacobs, appointed asst. vice president, Steel Div., Bethlehem Steel Co.

R. G. Gerstenecker, elected vice president and controller, Phoenix Iron & Steel Co., Phoenixville, Pa.

C. E. Clark, named asst. superintendent, cold strip mill dept., Cleveland plant, Republic Steel Corp.

Y. S. Hogg, named manager, Tampa, Fla., office, Allis-Chalmers Manufacturing Co.

G. H. Tagatz, appointed director, public relations, The Oliver Corp., Chicago.

J. R. Harbaugh, named manager, Houston sales office, Jessop Steel Co.

R. M. Conlin, Jr., named asst. coal traffic manager, Baltimore and Ohio Railroad, Baltimore, Md.



R. G. Schroeder, appointed forgings sales representative, Chicago area, J. H. Williams & Co.

G. C. Liebel, named manager, Eastern territory, Monarch Aluminum Mfg. Co.; **Joseph Shrier**, named manager, Central territory; **M. S. Hutchinson**, named manager, Western territory.



P. L. Bruhn, appointed manager, Truscon Steel Div., Republic Steel Corp., Youngstown, O.

A. M. Filak and **P. E. Maisch**, appointed sales representatives, Pittsburgh office, L. B. Foster Co.; **G. H. Wilshusen**, appointed sales representative, Houston office.



J. F. Smith, appointed manager, Anaconda Aluminum Co. Reduction Works, Columbia Falls, Mont.

The following appointments are within Westinghouse Electric Corp.'s

fuel products section, Pittsburgh: **R. W. Brown**, manager; **R. E. Bish**, engineering section manager; **J. Q. A. McClure**, manager of manufacturing.

Hevi-Duty Electric Co., Milwaukee, announces the following additions to its furnace staff: **Richard Hayden**, in charge of gas furnace sales; **Norman Acker**, engineering, sales, and production liaison; **William Swanson**, sales and service engineer, automatic heat treating units.

W. N. Brammer, appointed sales manager, Pressure Castings, Inc., Cleveland.



W. G. Smith, appointed general manager, Lackawanna, N. Y., plant, Bethlehem Steel Co.

K. C. Lippmann, appointed manager, transportation, The New Jersey Zinc Co., New York, N. Y.

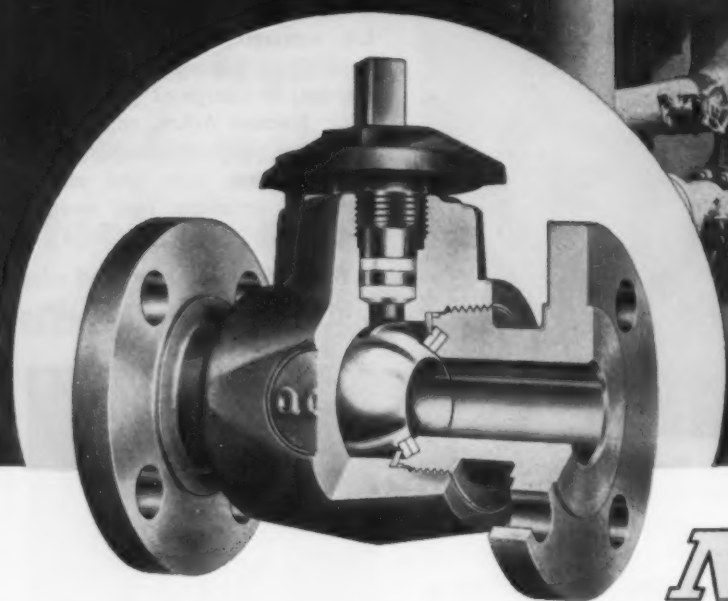
L. B. Smith, appointed executive engineer, AC Spark Plug Div. of General Motors.

G. B. Standifird, appointed works engineer, Columbia-Geneva Steel Div.'s Geneva Works, U. S. Steel Corp.

J. W. Mayers, promoted to chief engineer, Pittsburgh Coke & Chemical Co., Pittsburgh.

D. W. Matzen, appointed pur-

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of **W-K-M's**
Creative Engineering



NEW...

QCF non-lubricated Ball Valve

This newest of W-K-M's products is offered to valve users only after hundreds of tests in all types of service. This valve has proved that it will provide leakproof sealing in long, trouble-free service.

DESIGNED FOR SUPERIOR PERFORMANCE

Full Bore Conduit: Full, round conduit through body and ball assures full flow through valve. No restriction, no turbulence, no more friction or pressure loss through the valve than through an equivalent length of pipe.

Leakproof two-way seal: The ball is suspended between Teflon seats under compression, assuring leakproof service at rated working pressures or vacuum, indefinitely. Actual seating surfaces are sealed away and protected from any abrasive action of the lading flow in either open or closed position.

Other advantages: Minimum parts, minimum maintenance. Quarter-turn opening and closing. Corrosion resistant. Recommended for temperatures to 250° F.

Available in carbon steel (ASA 150 lb., 300 lb.), and semi-steel (200 lb., 400 lb.); sizes range from 1/2" through 6".

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with these ladings
without a
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Jet engine fuel (test cells)
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Liquid soaps, DDT and chlordane
Vinyl chloride
Butadiene liquid
Copper ammonium acetate
Carbon bisulphide
Cleaning naphtha
Lime and soda ash slurry
Riboflavin media
Gasoline (tank truck)
Helium gas
Coke oven by-product gas
Gasoline (tank car)
Chlorinated solvents

W-K-M

chasing agent, Chrysler Corp.'s Service Parts and Accessories Supply Div.

G. H. Rathe, appointed manager, marketing, Military Products Div., IBM Corp., New York.

A. A. Lanahan, promoted to purchasing agent, Granite City Steel Co.



W. R. Milliken, appointed manager, stainless bar and wire sales, Universal-Cyclops Steel Corp., Bridgeville, Pa.

V. M. Clifton, appointed superintendent, river transportation, Armco Steel Corp., Middletown, O.

J. A. Bilka, appointed factory manager, Communications Div., Topp Mfg. Co.

J. W. Parker, appointed control-



R. J. Heister, appointed manager, Pittsburgh Div., A. M. Byers Co.

ler, Refractories Div., H. K. Porter Co., Inc.

G. N. Houck, appointed manager, promotion and technical development, Electrical Conductor Div., Kaiser Aluminum & Chemical Corp., Oakland, Calif.; **J. C. Ferguson**, appointed general sales manager of the division.

Edward Lindberg, Jr., named asst. sales manager, Diehl Mfg. Co., Somerville, N. J.

L. F. Fow, named sales super-

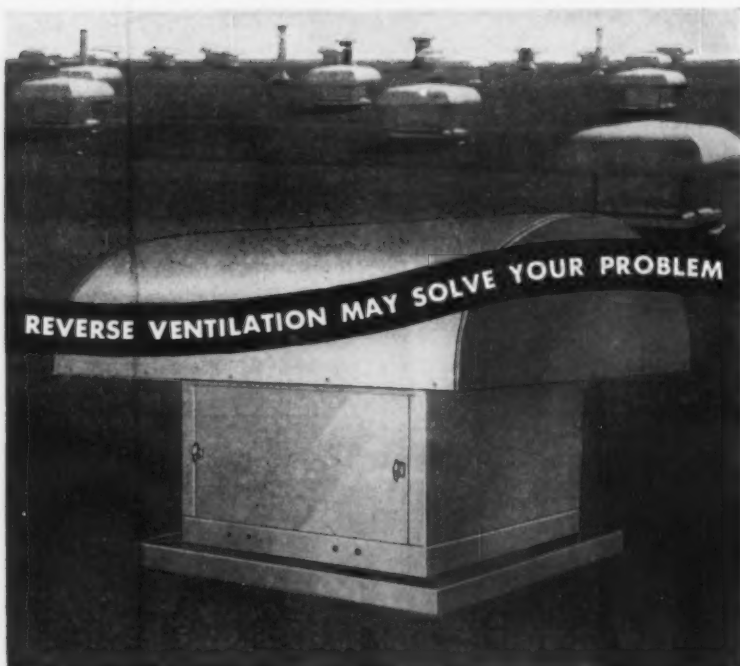
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probe flashlight**



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Burt Low Type Ventilators, Supply and Exhaust Air for Aluminum Co. of America

Blow Down Fresh Air to Blanket Floor Area

Wide, low-roofed, modern single-story plants are often difficult to ventilate properly with conventional methods. Perimeters are comfortable but other areas may not be.

Aluminum Company of America's new Screw Machine Products Plant at Lancaster, Pa., with neither cross ventilation nor natural ventilation, solved this problem with "reverse" ventilation. Forty-nine 48" all-aluminum Burt Low Type Roof Ventilators maintain a year-round pleasant working atmosphere.

Twenty-five of the Burt Ventilators operate in *reverse* to blow a

blanket of fresh air over the entire working floor. Adjustable diffusers circulate the air at floor level to meet seasonal needs. Strategically located over various hot areas, these Burt supply ventilators need no long horizontal duct runs to reach air intakes on outside walls.

The other twenty-four Burt ventilators exhaust the considerable heat and oil mist from production operations.

The cost of these Burt units was less than one-fourth that of a centralized duct system.

For fresh air at low cost in your plants, why not investigate Burt's complete line of modern, efficient roof ventilators now!



Send for FREE Data Book!

Write for Burt Data Book SPV-101-G
It supplies quick data on Burt's complete
line of modern Roof Ventilators.

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MEMBER AIR MOVING & CONDITIONING ASSOCIATION, INC.

visor, Foundry Products Div., Cooper Alloy Corp., Hillside, N. J.

R. S. Nestor, Jr., appointed sales manager, Stamping Div., McDowell Mfg. Co., Pittsburgh.



W. H. Howard, appointed sales engineer, Pittsburgh office, Morgan Construction Co.

R. E. Herzler, Jr., appointed aluminum specialist, Chase Brass & Copper Co., a subsidiary of Kennecott Copper Corp.

R. H. Fogarty, appointed pipe welding engineer, Tube Turns Div., Chemetron Corp.



M. H. Creter, appointed asst. superintendent of industrial relations, Union Drawn Steel Div., Republic Steel Corp.

H. H. Neumann, appointed sales and service representative, Denver territory, Lewis-Shepard Products, Inc., Watertown, Mass.



"ASSORTED" STEEL WIRE **from ONE source . . . in ONE carload**

If your manufacturing operation calls for many types of steel wire and you are looking for *one dependable source of supply*—call CF&I.

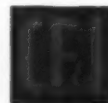
Whether you need *one coil* of a specific type of wire or a *carload* of "assorted" wires, we can provide fast delivery of the kind of wire you need in the type of

package you prefer.

High or low carbon steel wire—round, flat or shaped—in a wide variety of sizes, tempers, grades and finishes—in steel-strapped or paper-wrapped coils; on spools, reels, "spiders" (holding up to a 4000-lb. continuous length of wire) or in fibre drums. Let us know your requirements.

CF&I-WICKWIRE WIRE **THE COLORADO FUEL AND IRON CORPORATION**

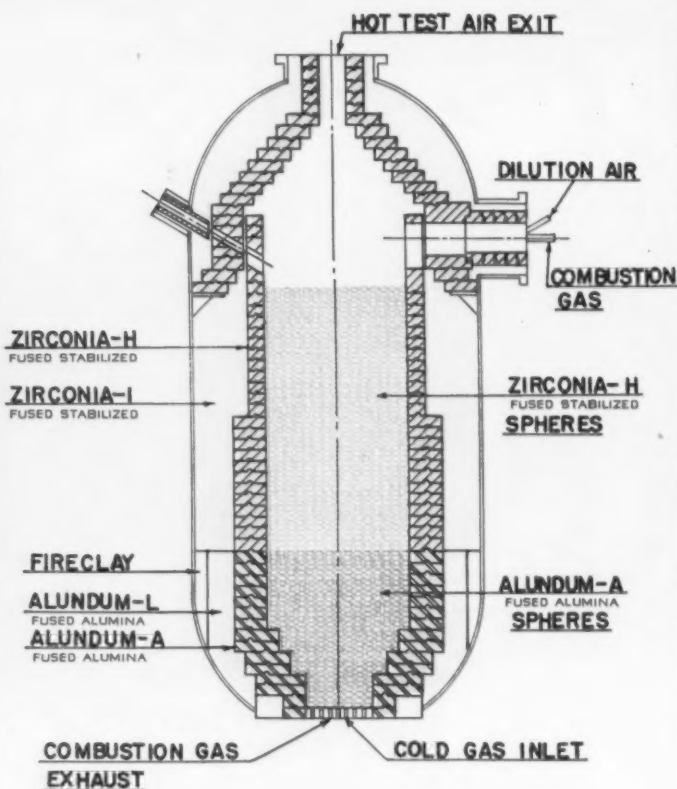
THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Ft. Worth • Houston • Kansas City • Lincoln • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro • Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia • **CF&I OFFICES IN CANADA**: Montreal • Toronto • **CANADIAN REPRESENTATIVES AT**: Calgary • Edmonton • Vancouver • Winnipeg



6067



Newly Installed Pebble Heater at the Marquardt Aircraft Company of Van Nuys, California, designed to produce hot air for testing missile materials. Combustion Inlet shown above is lined with Norton Fused Stabilized Zirconia.



Aiding progress in high temperature testing . . .

Norton refractories provide high temperature insulation and heat transfer — at temperatures over 4000°F.

Norton refractories were specially designed to meet the high expansion and contraction conditions encountered in this new pebble heater. ALUNDUM® Fused Alumina and Fused Stabilized Zirconia refractories used for practically 100% of the construction of this unit and for the pebble bed protect against extremely high temperatures and provide maximum efficiency in heat transfer. As shown in the diagram of the pebble heater — designed by Marquardt engineers — combustion gas, mixed with dilution air, enters at upper right. The input burner supplies 100,000 to 1,000,000 B.T.U. per hour over temperatures ranging from 200°F. to above 4000°F.

The intensely hot gas, after flowing

through a pebble bed of Zirconia and ALUNDUM Fused Alumina spheres, exhausts below. Entering near this exhaust, ambient cold air passes up through the pebble bed, extracts the stored heat and leaves at the top of the heater. This hot air is used for testing the heat resistance of various missile materials.

A similar installation, using Norton-designed refractories, and operating intermittently, 2 cycles per day, has provided nine months of trouble-free service. ALUNDUM Fused Alumina and Fused Stabilized Zirconia refractories are among the very few materials with sufficient resistance to chemical, thermal and mechanical attack to be suitable for such operations.

If you have a problem involving high temperature insulation or heat transfer, or if you would like further details on Norton Refractories, write to NORTON COMPANY, Refractories Division, 207 New Bond Street, Worcester 6, Mass.

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BETTER-METHODS TEAM: Listening to R. P. Brooks, Jr. (right) discuss typical production problem

are D. P. Gould, Vice President, Marketing Div. (left) and R. C. Trundle, President, Trundle Consultants Inc.

How to Cut Production Costs

Change to Better Methods

By R. P. Brooks, Jr.—Vice President, Manager of Mfg. Div., Trundle Consultants Inc., Cleveland

Right now, some — maybe many — of your manufacturing methods could be improved to save you money.

Your big question is not how to improve them, but which are the best ones to work on.

Here's a blueprint for analysis and action.

■ Manufacturing methods offer a fertile area for cost cutting. But it's tricky territory. Exploring it for maximum yield calls for the best effort in analysis and planning that can be brought to bear by both

management and engineering groups.

Here's an example. The Electric Controller & Mfg. Div. of the Square "D" Co., Cleveland, was using wire brush wheels in a manual operation to surface finish aluminum die cast parts. The foreman of this section suggested mechanizing the job.

In due time, his suggestion was adopted and shot peening equipment was put in. Even though it wasn't used for a full shift, it cut the former labor cost more than 50 pct and paid out the full investment in less than a year.

Shot peening also produced a

bonus effect: it eliminated two coats of paint which some parts had formerly required. Moreover, mechanization gave better production control through more predictable output rates.

Lots of Study — Here was a

This is the second of a number of articles on the various approaches management can take toward cutting costs. The first appeared May 1.

Future subjects to be covered by Trundle Consultants will include quality control and material handling.

method improvement that paid its way many times over. On the surface, the link between the foreman's idea and its adoption looks simple. Actually, much overall management study and analysis were involved. Literally hundreds of methods-improvement ideas were turned down for this one that was accepted.

Electric Controller's prime concern was—and is—not how an operation can be improved, but which operation should be improved. Almost any method can be tightened up, but only a few will produce more profit. Since profit is the goal of any business, every suggested improvement must be examined in this light.

A well-oiled methods-improvement apparatus rolled into action when the foreman suggested mechanizing the finishing operation. The industrial engineering department brought the idea to a joint meeting of the manufacturing group, composed of the superintendent, general foreman and departmental foremen.

They decided the idea merited an operations analysis.

Check All Angles—Operations analysis is a step-by-step check of the job under study. It pinpoints such items as: present costs of operation, existing methods, machine layout, work flow, specifications and tolerances, handling, and indirect operations.

On the basis of this analysis, engineers figure what the new method might save in direct and indirect labor and overhead. If potential savings loom large, a further study is made of sales, marketing and the bigger financial aspects involved.

If estimated savings are nominal, the project is assigned to an industrial engineer. He works on it as a fill-in job to see what improvements can be made with the least outlay of staff time and capital.

Potential Profit—In case of the suggested improvement in finishing, operations analysis showed large potential savings. Since a lot of new equipment was needed, the

marketing department was asked about the sales potential of the products involved.

The answer: favorable. These products had a growing market for at least five years. Another survey showed that customers would accept the new satin finish as well as the former glossy one.

Get Financial Facts—The controller of the Division was then asked for guidance on a realistic pay-out for the improvement. He also helped assess some of the intangible costs and benefits for which there were no records: indirect labor, inspection time, handling, paper work, power, use of materials, and use of floor space.

The company then sought counsel from outside management specialists and vendor firms with similar experience. Finally, the personnel director was asked to assess the effect of the proposed change on the company's labor relations.

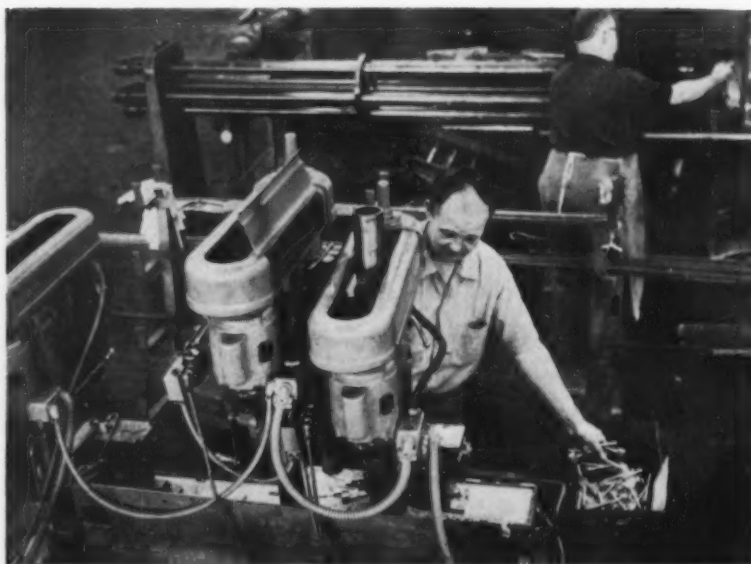
Only after all these major steps were taken and affirmative results

Watch Unnecessary Handling

■ Square "D's" Electric Controller and Mfg. Div. had a problem with studs and coil cores made on automatic screw machines. Parts had to be carried to another department for second-operation drilling and tapping on hand-feed drill presses.

Working with a specialty machine vendor, the firm assembled a semi-automatic drilling and tapping unit from standard components. To save inter-departmental handling, it was set up near the bank of automatic screw machines. By fitting it with a standard transfer table, an operator was able to use a third spindle to drill locating holes.

Automatic cycling instead of hand feed now controls drilling and tapping time. Moreover, parts are completely finished in the one department.



WHERE IT'S NEEDED: Semi-automatic drilling and tapping unit takes parts from nearby automatics, saves a trip to another department.



CHOICE METHOD: Shot peening finishing method cut labor costs 50 pct and paid out in less than a year.

assured, was the green light given to make the proposed improvement a reality.

Four Key Areas—But since most of the plans for methods cost reduction are made at the engineering level, it's worth stressing the four areas engineers should think about most: machine equipment and tooling, material flow, product design and development, and operational methods.

As for machinery and tooling, any methods cost-reduction program must look into automatic handling and gaging. Pay-out on such investments usually takes a long time and calls for careful and realistic studies of probable savings.

Also, are you using modern carbide or ceramic tooling in the right way, on modern machines? And don't forget multiple tooling, progressive dies, or any good means for doing a series of operations quickly and automatically.

Tied in with your basic tooling

are automatic feeding, conveying and racking devices. Are you using them effectively to get workpieces into, through, and out of your machines?

Keep Material Moving — Now, consider material flow. Think of it in terms of machine locations. For example, group those machines which do a variety of operations so that one operator can run a workpiece through the full cycle.

Above all, don't let a man stand idle while a machine is taking a long cut. There are probably other things he can do to keep material flowing. If he's skilled, try to see that these "other things" use his skills.

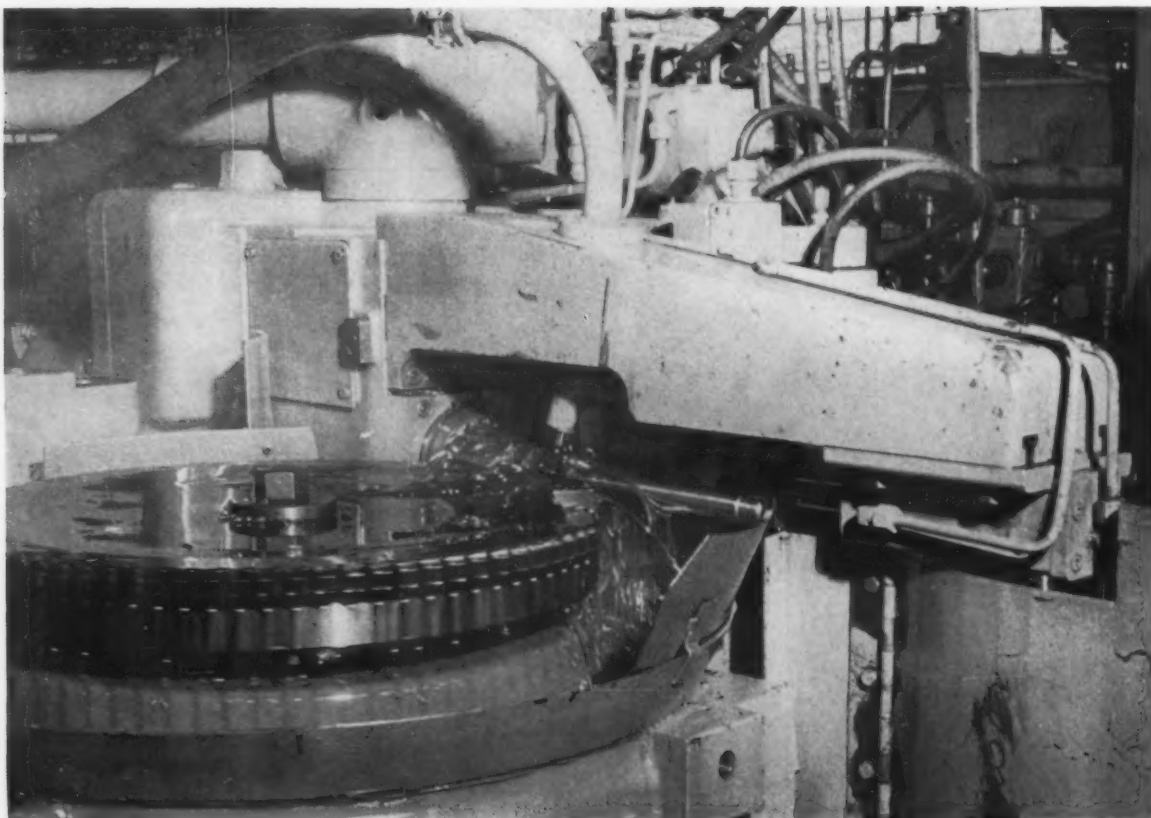
When it comes to product design, engineers should ask questions like these: Are we using raw materials that are easiest and most economical to process? Are tolerances realistic? Are we using special fasteners when standard types will do? Are vendors' parts specified in line with our own cost reduction

goals? What this adds up to is taking the product apart from time to time and studying it in the light of new ideas and suggested methods.

Workers Count Too — Finally, methods engineers get into the act when: workers don't produce above standard; orders are late; rejects and rework run high; accident rates go up; bottlenecks lead to overtime work or subcontracting; or a lot of physical work is involved.

A word of caution. Don't rush into methods improvement on a crash basis. Without good planning you can count on labor unrest and confused production schedules. Educate shop workers carefully.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



FAST CUT: Circular broach-type cutter rough forms a gear slot on each revolution as workpiece indexes.

Gear Unit Broaches Sectors

Any time a machine performs a whole cycle that once took multiple units, you can simplify and speed production.

That's the way it is with a new unit cutting gear sectors for an auto maker.

■ Gear making, by tradition a step-by-step precision process, is moving ahead with emphasis on greater output, more mechanization. New methods depend on machine accuracy rather than operator skill.

This trend in better gear making is seen in a new installation at Ford Motor Co., Indianapolis plant. The operation is cutting of teeth on a

gear segment. It's a sector shaft, part of a steering assembly.

The basic gear cutting unit is a Revacycle, built by Gleason Works, Rochester, N. Y. Its production rate exceeds that of seven gear shapers formerly used on the job.

To Solve Difficulty—Design of the part is why it's difficult to make on a high-production basis. First of all, the blank is forged. The material is SAE 5120, a typical chrome steel for such automotive parts, and not one of the easiest to machine.

Tolerances are close and critical for a production operation. The arc-tooth tolerance is ± 0.001 -in. Similarly the dimension from centerline

of the shaft to the pitch circle must be held within 0.002 in. Main stem is machined to 0.001 in.

With five teeth, the sector gear is at an angle of $1^\circ 32'$. The teeth themselves are at an angle of $7^\circ 30'$ to the shaft centerline.

Prepare Forging—The rough forging goes through a milling operation. There it's cut to length and both ends of the shaft are center drilled.

Next the shaft is turned in a tracer lathe, using a template. Faces of the gear sector and the outside diameter are machined in an automatic chucker before the part goes to the gear cutting department.

An overhead monorail conveys

the parts in process. The operator of the Revacycle picks off the parts and loads them on a circular loading plate. This carries them around to the machine-loading station.

Unit Loads Itself—An automatic mechanism loads the parts. The sector end of the shaft is hydraulically chucked in a collet-type arbor, while the other merely rests against an outboard support.

In the first machining operation the sector teeth are rough formed. Then the workpiece transfers to another station similar to the first for finishing.

Cutters are large circular tools of about 2-ft diam. Cutter teeth form the individual teeth to depth with the workpiece held stationary in horizontal position.

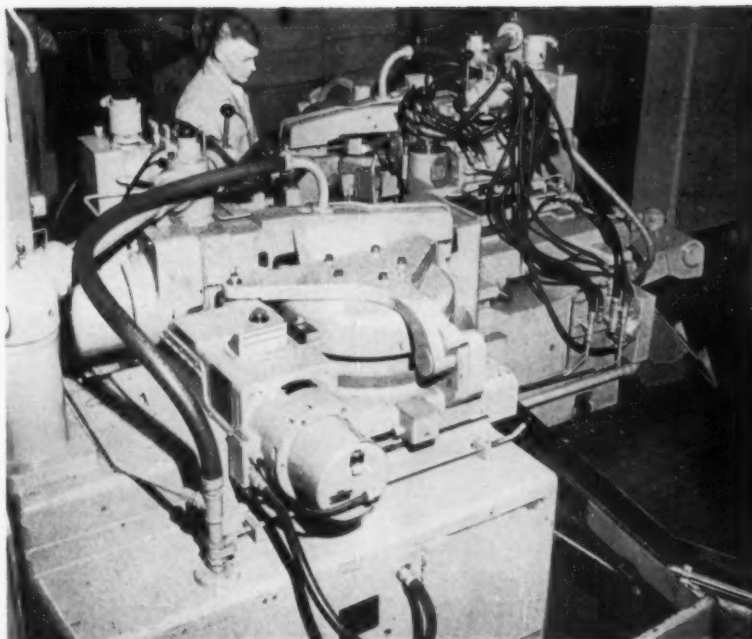
By indexing the workpiece while the gap portion of the cutter is passing by, succeeding teeth are cut during each rotation of the cutter. The teeth are chamfered at the same time.

Accuracy in Tool—In this installation accuracy of the teeth generated depends on the cutter form and proper setup, instead of operator skill. Even with the stringent tolerances set for the job, Ford can use the gear sectors as they come from the machine without further machining or grinding.

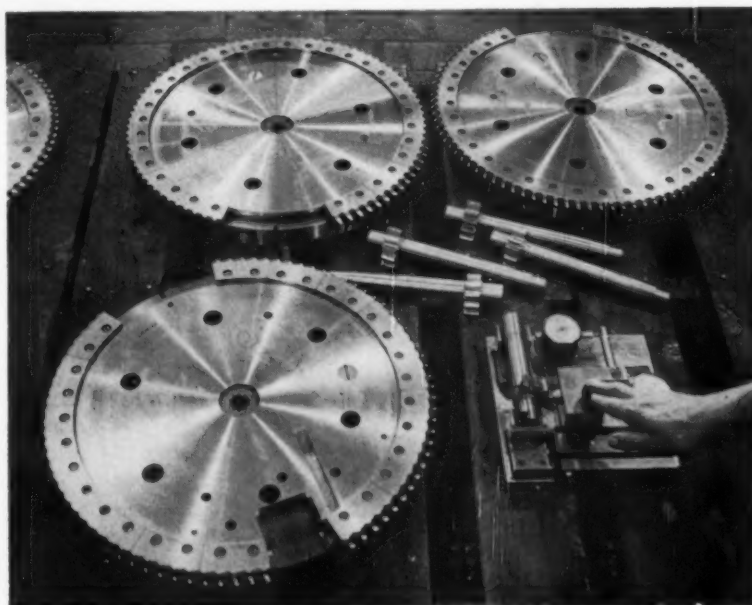
Made of high-speed steel, the cutter teeth are made in the cross sectional shape of the gear tooth valley. Teeth of the tool around the circumference are progressively longer to give a broaching action. Minor adjustments in depth of cut are made by altering the stationary position of workpiece.

During the cutting operation a forced flow of coolant floods tool and chip removal area. This both washes out chips to permit the fast cutting, lubricates the tool, and gives cooling action. The coolant is a standard water emulsion.

Finishing the Part—After the gear sector is finish cut in the second operation, the workpiece ejects from the machine to drop into a gravity chute. This carries it to an



SIMPLE LOADING: Feed parts and machine takes over with automatic chucking. Completed parts slide down gravity chute (right).



CIRCULAR FORM: Tooth lengths on rough and finish cutters increase progressively to give broach action for forming gear tooth depth.

elevator conveyor which takes it to the next operation.

A spline and thread are rolled on the lower end. After checking, a tee slot is broached in the stub and the part is copper plated on both ends.

Then it's delivered by conveyor

to heat treatment for carburizing and hardening. Finally, stem and pilot diameter are finish ground.

Important Advantages — Tool setup and changing is relatively simple and fast. Since one machine does the work of seven, maintenance and service time is greatly reduced.



SPECIAL UNITS HELP: Operator merely loads machine which drills, taps, and chamfers four holes in hub yokes.

Costly Machining Bottlenecks: How to Break Them

By R. H. Eshelman—Engineering Editor

Do machining operations slow up production in your plant?

Are frequent part changes, excessive setup time, and complex tooling responsible?

Here's how one firm overcame such problems.

■ When machining departments bog down, there's a reason—and a remedy. Maybe planning is haphazard. Or perhaps inspection

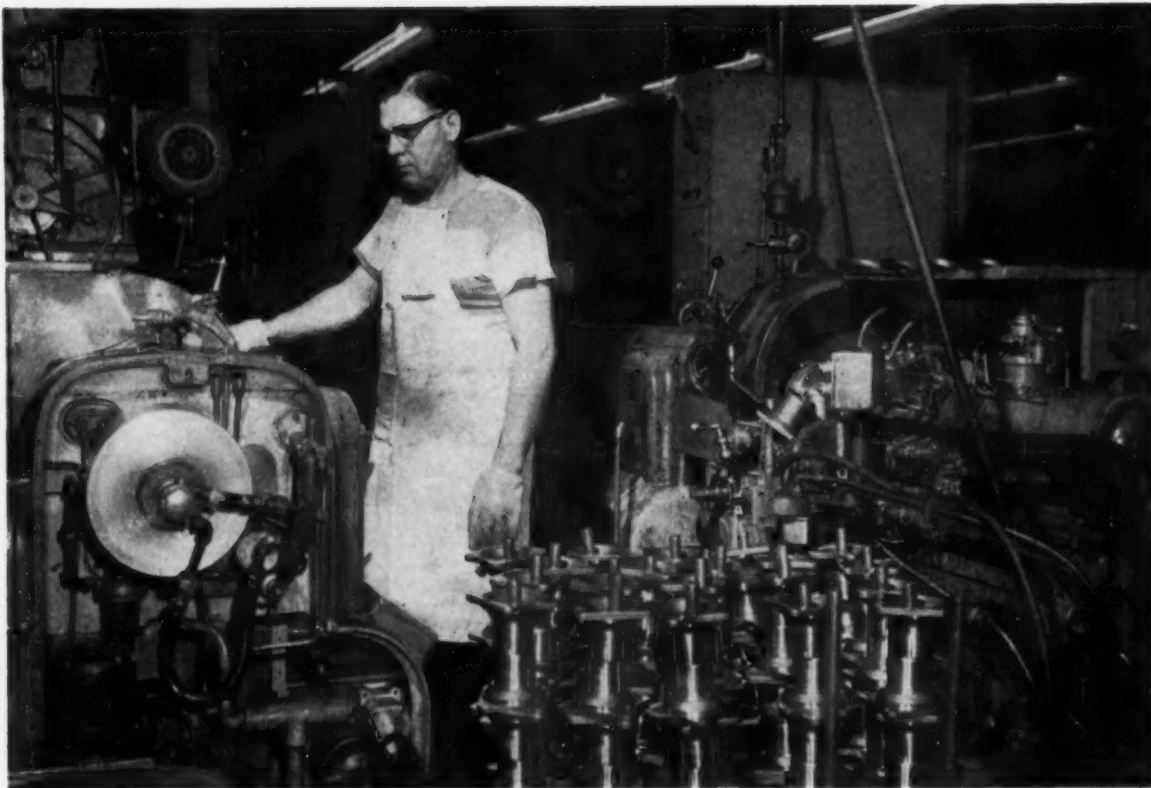
doesn't catch errors early enough. Are parts engineered for efficient production? Or did designers forget to consider manufacturing facilities and problems?

Smooth running machining operations take foresight, experience, and the right equipment. Over the years, Detroit Universal—now a division of Chrysler Corp.—has faced and licked many problems that plague the machining field.

Lee Fowler, manufacturing manager of the division, says: "Planning and tooling are all-important.

You must keep your machines running as long as possible without interruptions. When you make changes, they lose their rhythm and it takes time to get production up again." His advice: "Plan and tool to hold changes to a minimum."

Many Parts—This takes some doing when you have an active list of between 350 and 450 parts, mostly forgings or malleable iron castings. To cut these tough materials, Detroit Universal sticks pretty much to carbides for top tool life, maximum production rates, and



MORE PRODUCTION: Tracer lathes are teamed in pairs and tended by one operator for turning outside

contours of flanged hub parts. Simple, flat templates furnish the machining contours.

minimum downtime.

Sizes of production runs vary widely, from as few as five pieces, for old model service needs, to 50,000 or more per month. The shop takes both large and small lots in stride. It uses considerable mechanical handling on continuous production. Plant engineers have not gone to automated nor special machines to any extent because of the variety of work.

Start With Design — According to the firm's engineers, the first place to look for potential bottlenecks is in the part itself. Unless some thought is given to production in early design stages, some real stumbling blocks can appear.

That's why production engineers review part designs before they're released to the shop. Minor and inexpensive design changes can often fit new parts into existing tooling and processing patterns.

Tooling, of course, makes or breaks a job. The important thing is to keep it simple and practical. For the splined hub yokes, universal joints, and cylindrical flanged pieces the plant machines extensively, engineers use definite tooling principles.

"Start from a single reference point," Fowler warns, "and then stay with it." This way your machining sequences fall into a logical order, he explains. Both tooling and processing are simplified. Locating and workholding of parts are positive, and you don't build up tolerances.

Suitable Equipment Helps — Naturally you've got to have the right equipment. Because both internal and external splines are required on many parts, Detroit Universal uses a number of dual-slide vertical broaching machines. These turn out two parts with each stroke. The

operator unloads and loads one set of fixtures during the work cycle of the other slide.

Also, because many splines have the same cross section, several different parts can be broached on the same setup. Different spacers or tooling blocks are usually all that's needed.

Watch Versatility — The firm strives for versatility in other machining operations, also. For turning, six 20-in. Monarch Monomatic tracer lathes are key items. They're arranged in sets of two. Because they're automatic, except for loading and unloading, one operator takes care of two machines.

Simple, flat templates furnish the machining contours. Positive-stop mandrels hold workpieces for rapid carbide cutting. On some flanged parts, a rear tool cuts simultaneously with the front tool.

Grinding is held to a minimum

because tight machining tolerances are maintained. Chucking type grinders, for surface finishing, use the same type of dual-purpose tooling applied in broaching. On some high production work, the plant drills and taps on special machines. Again, all the operator does is load

and unload. The machine cycles are automatic.

Plan Ahead—For a smooth running shop, planning is vital. This plant tries to group similar parts and schedule them in sequence to minimize machine changes and

downtime. The approach ties in directly with the convertible tooling program, where workholding devices and tools are designed to handle two or more similar parts. Thus, the production rhythm of machines is disturbed as little as possible.

Another of the firm's planning ideas is one that many well-organized shops use: setting aside some of its machines for odd lots so it can run longer on continuous production or high volume setups. This keeps many common bottlenecks from developing.

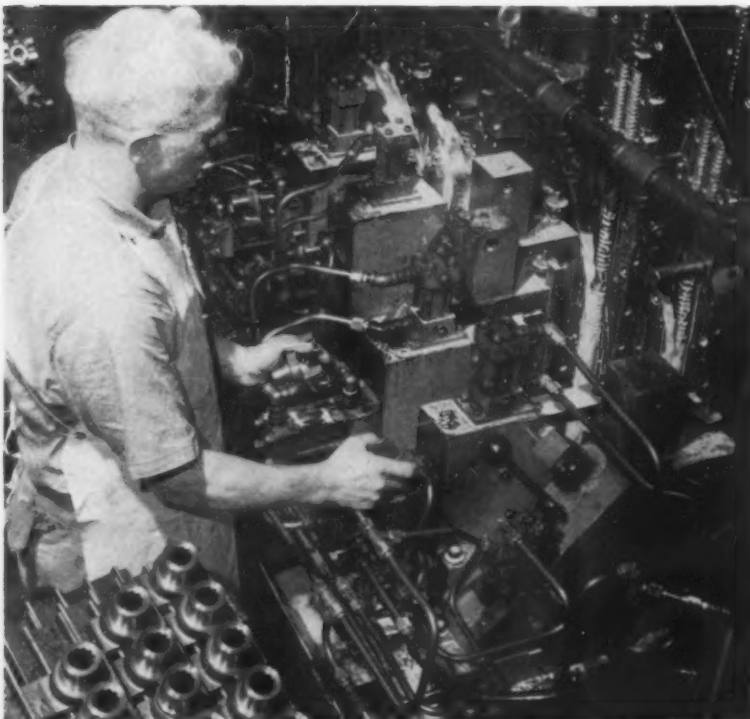
Rejects can also be a source of nagging production delays. Often it's difficult to pin down the real cause. It's easier, Detroit Universal engineers believe, to start out right and keep a close check on parts so rejects don't get out of hand.

One way this can be done is to make operators responsible for checking their work. This plant gives them snap and dial gages to check critical dimensions on each job. Operators check the first pieces carefully to see that their machines are operating within limits. Then they inspect by sampling from time to time.

Quality Control, Too — Because the operator's checks are simple and fast, they don't interfere with production. But the plant also applies more detailed inspection, using statistical methods, to assure complete control. Tolerances are fairly typical, being in the 0.002 to 0.003-in. range.

In the final analysis, any shop can avoid most machining bottlenecks by blending the following production elements properly: (1) part design, (2) sound tooling principles and programs, (3) machines that will do the job, (4) production personnel, (5) inspection and quality control, (6) planning and scheduling for a smooth flow of work.

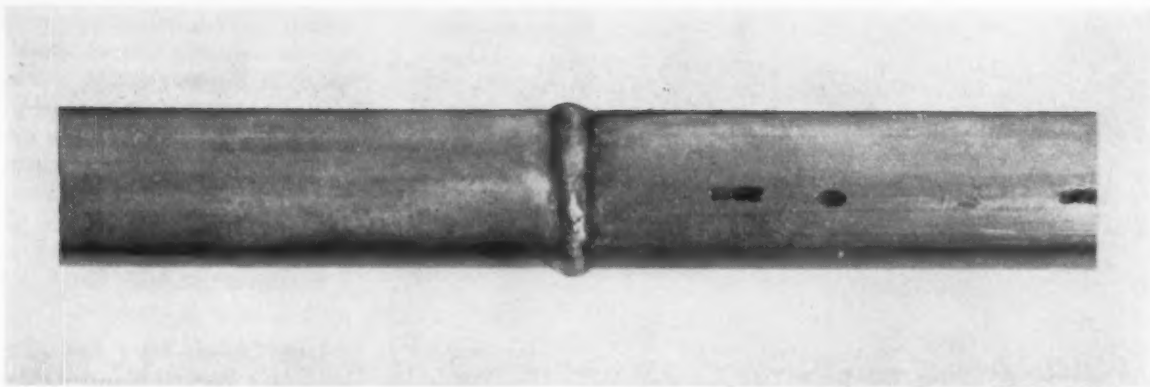
Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



TIME SAVER: Dual-slide vertical broaching machine produces internal splines in two parts while operator loads two blank workpieces.



TYPICAL PARTS: Grouping similar parts and scheduling them in sequence is a big step toward cutting machine changes and downtime.



MAKES BIG DIFFERENCE: There's no corrosion on annealed 304 stainless section of test tubing (left).

But un-annealed 304L section (right) is severely pitted along seam weld despite low carbon content.

Anneal Stainless Tubing For Corrosive Use

By J. S. Adelson—Chief Metallurgical Engineer, Steel and Tubes Div., Republic Steel Corp., Cleveland

When you use a stainless product without welding or forming steps, you can be sure of its properties.

But once you subject stainless to welding temperatures and cold forming, it pays to check on how to retain anti-corrosive properties.

■ To anneal or not to anneal is the question. It arises from the many conflicting positions concerning the treatment of austenitic grades of welded steel pipe and tubing—primarily types 304L and 316L.

On the affirmative side, annealing insures maximum corrosion resistance and longer service. There are many sound metallurgical reasons for this stand, and much visual evidence to back it up.

But what about the other side? Some hold that it's unnecessary to give a final solution anneal. It's

on the premise that due to the low carbon content of these analyses inter-granular carbide precipitation does not occur during the welding process.

End Use Important—The fact is that there are many kinds and degrees of corrosion with thousands of different alloys and protective means devised to combat individual cases. For example, Type 302 stainless steel sheets are welded together to form food or milk processing tanks without subsequent annealing at the welded joints.

But no one would ever think of using this method for vessels handling hot nitric acid. This same reasoning can be applied to the production of tubing for the full range of corrosive environments found in the processing industry.

Attack on stainless tubular products is not confined to intergranular corrosion because of carbides. In fact, this is a rarity today because of the knowledge gained in handling

the standard types 304 and 316.

Fix Causes of Failure—Instead the main causes of failure in stainless tubing are: intergranular corrosion because of particular grain boundary constituents, stress-corrosion cracking, and pitting. These phenomena have little to do with actual carbon content or degree of carbides precipitated at the grain boundaries.

Due to the relatively low cost of the annealing operation compared to the cost of the raw material and finishing operations in producing welded stainless steel tubing, all welded pipe and tubing made from the 300 series of stainless steels should be given a final solution heat treatment at 1850-2050°F, depending upon the type. This applies to the low carbon grades 304L and 316L as well as to the standard analyses.

Where the low carbons 304L and 316L, used as substitutes for the stabilized types 321 and 347, are



FIG. 1: Welding causes formation of delta ferrite deposit in the dendritic grain boundaries. ($\text{CuCl}_2\text{-HCl}$ etch, magnification 250X)



FIG. 2: Proper solution heat treatment transforms the delta ferrite in weld area to austenite. ($\text{CuCl}_2\text{-HCl}$ etch, magnification 250X)

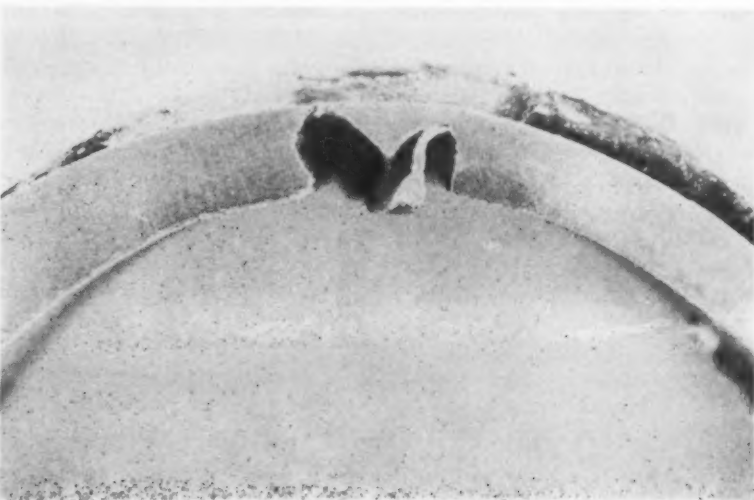


FIG. 3: A section of unannealed 304L, exposed to a low concentration of nitric acid, shows severe weld attack. (Magnification 4X)

welded in fabricating operations without annealing, it's usually because the assembly cannot be heat treated because of size or design. The carbon content is so low that theoretically no carbide precipitation takes place in the grain boundaries in the metal adjacent to the weld zone where the metal reaches a temperature of 800-1600°F, the carbide network formation range.

Low Carbons Have Use—Carbides in a continuous network are particularly deleterious when the 300 series stainless steels are exposed to a corrosive environment. The low carbon grades are therefore used to avoid heat treatment in welded structures.

These grades have lower high-temperature strength than 304 and 316, hence they have lower assigned stress values. The standard 304 and 316 are used if assembly welding is not involved.

It's because the primary objective in using 304L and 316L is avoidance of carbide precipitation that some assume annealing is unnecessary on welded pipe and tubing. Actually a number of factors enter into the decision as to whether annealing is necessary.

Forms Delta Ferrite—Despite the austenitic makeup of 300 series of stainless steels, delta ferrite is formed in the weld on 304, 316, 304L and 316L during welding. Fig. 1 illustrates the delta ferrite deposited in the dendritic grain boundaries in the weld.

This constituent promotes accelerated attack in the weld due to grain boundary corrosion. But proper heat treatment will transform the delta ferrite to austenite (Fig. 2).

In one case a line was made up of both 304L unannealed and 304 annealed tubing and placed in a tank of liquid detergent. The unannealed 304L was severely pitted in the weld, whereas the annealed 304 joined to the 304L with a circumferential weld was not affected.

The same condition of weld attack occurred in a nipple made of

unannealed 304L, which was removed from a pipe line carrying a low concentration of nitric acid (Fig. 3). Both these cases point up the importance of annealing low carbon grades of stainless.

Cold Work Affects—Another factor is that cold work lowers corrosion resistance of stainless. Although annealed flat rolled steel is used in the manufacture of welded pipe or tubing, an appreciable amount of cold work is given the steel in cold forming the tubular shape, sizing after welding, and even straightening.

It's confirmed by higher mechanical properties, hardness, yield and tensile strength of as-welded tubular products over those of the annealed product. Internal stresses in such tubes can cause failure in service due to stress corrosion. The extent of corrosion may be so slight that it is not detectable by the naked eye, but the tube will crack due to the combination of stress from cold work and corrosion.

Presence of chlorides is particularly serious and accelerates the failure which generally occurs in the base metal, not in the weld area. For this reason alone, all stainless should be annealed if it is to be used for its corrosion resistance.

Cracks in Surface—In one case a piece of as-welded type 304L tubing was immersed in 42-pct magnesium chloride solution at 170°F for 180 hours. The stress cracks on the surface (not in the weld) are readily visible as a Christmas-tree pattern (Fig. 4). Typical of stress-corrosion failures is the transgranular cracking through the tube wall (Fig. 5).

Types 304 and 316 correctly annealed are superior to 304L and 316L as-welded since the latter are not in the optimum condition for resistance to corrosion. The value of the lower carbon content in this respect is insignificant.

One argument from the corrosion angle for not annealing is the slight lowering of surface quality or

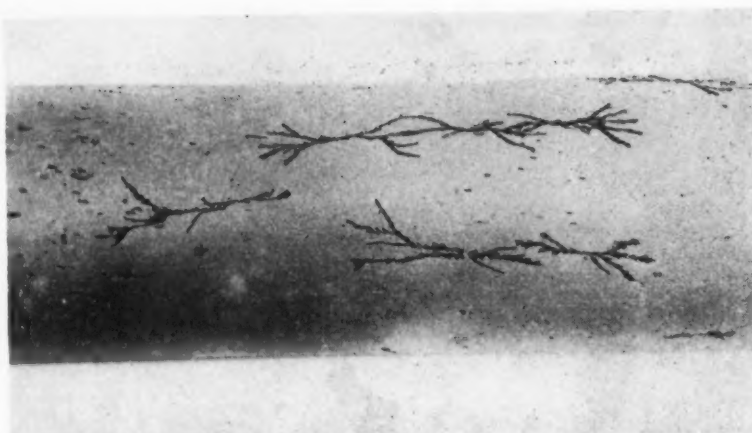


FIG. 4: Stress-corrosion cracks on surface (not in the weld) of as-welded type 304L tubing show up as a Christmas-tree pattern.

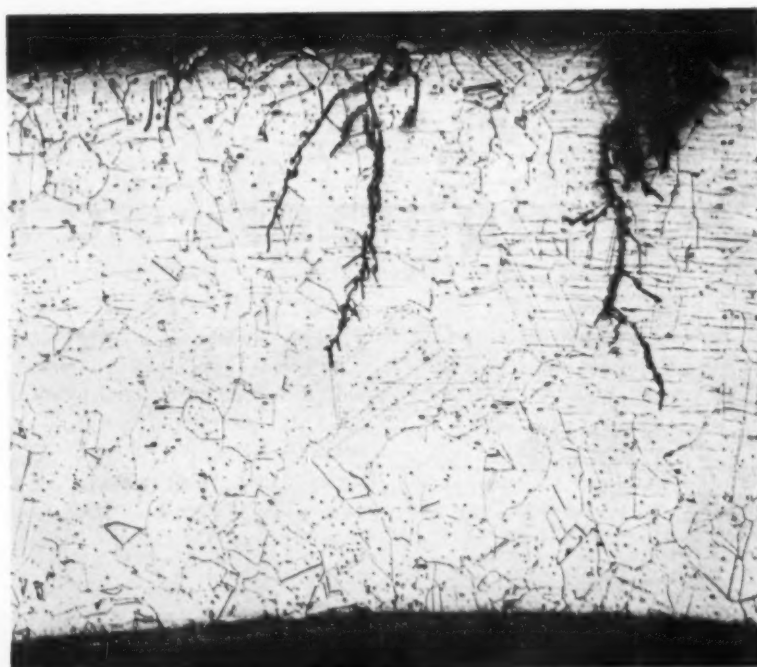


FIG. 5: Typical stress-corrosion failure is transgranular cracking through tube wall. (Chromic acid etch, magnification 100X)

smoothness. It's due to the pickling operation to remove the scale formed in annealing.

How to Avoid Scale—This objection is readily overcome by using a bright annealing furnace for heat treatment whereby the original cold rolled and cold worked surface is retained because no scale is formed. Pipe and tubing so annealed is the best product available.

Where corrosion is relatively mild, stresses are nil, and operating temperatures low, unannealed 304L and 316L can be satisfactory. However, this generally means carrying two stocks of pipe and tubing. It increases the possibility of wrong application and consequent premature failure. One failure can be costly enough to offset the small difference in cost between the unannealed and annealed product.



PALLETIZED SETUP: Racks at National Tube Div. are 120 ft long, 5 ft high. Slotted angle cost under \$3000.

Slotted Angles Find Many Uses

Making wooden shelves, bins, racks and worktables can be a real nuisance in a busy shop. And space for lumber storage is usually at a premium.

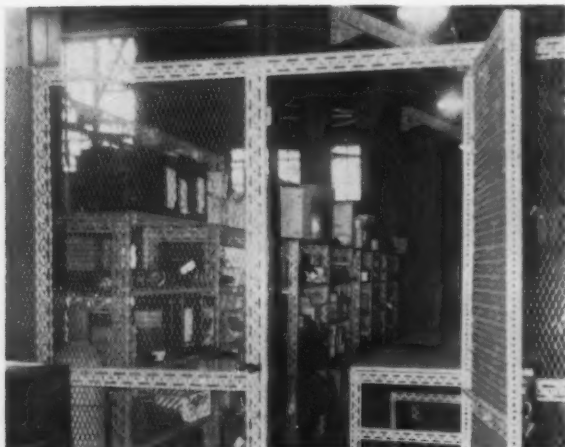
Look what anyone can do with slotted angle iron.

■ From mines to mills, United States Steel Corp. is using a durable industrial framing material to solve at least a dozen different maintenance and storage problems.

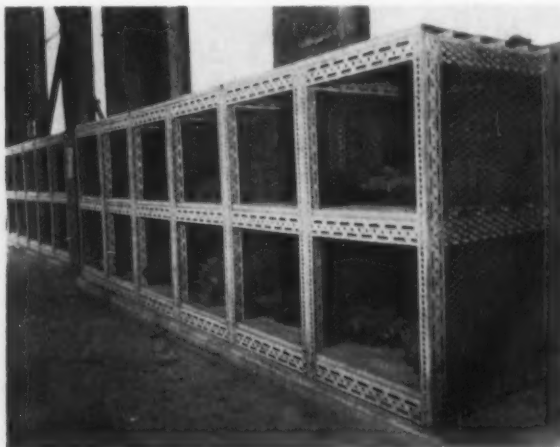
The cut-and-bolt material is a cold rolled slotted steel angle iron made by Acme Steel Co., Chicago.

Known as Acme Steel Dexion slotted angle, the material is easily cut on the job and assembled without special tools or skills.

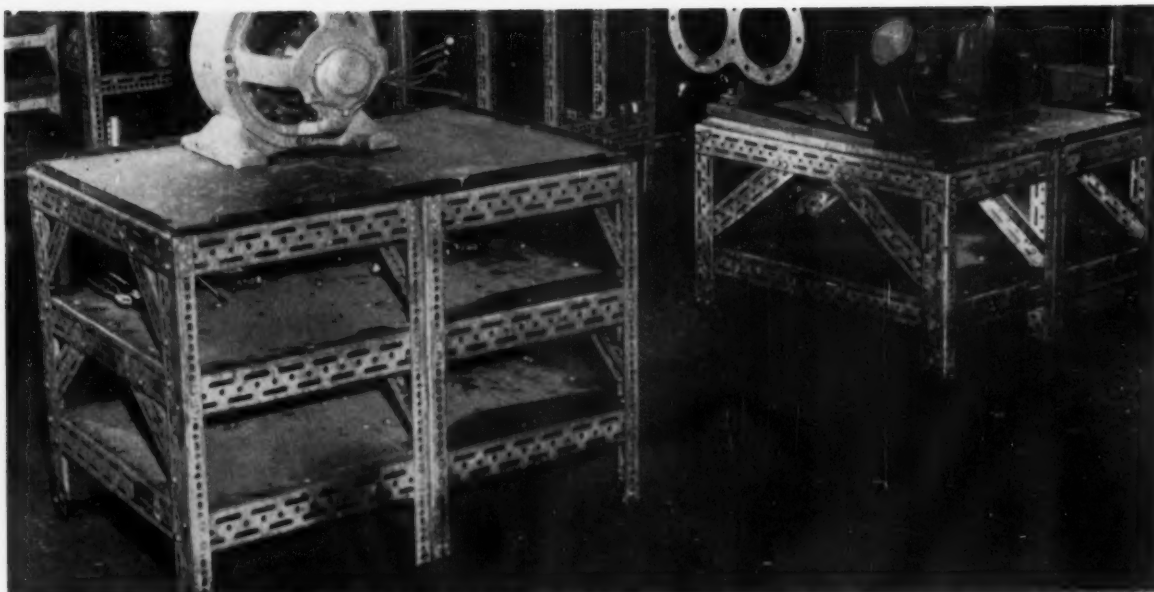
U. S. Steel uses the material for pallet racks, parts storage, workbenches and tables, partitions and enclosures, electrical panel mounts,



NEAT ENCLOSURE: Slotted angle forms storeroom at Clairton Works. Racks are of same material.



ECONOMICAL RACKS: Six storage racks 12 ft x 6 ft x 30 in. were built at Duquesne Works for \$1933.



STURDILY BUILT: Worktables of slotted angle in the maintenance shops at Clairton Works withstand rugged use.

resistor racks, bins and shelving, and free-standing, small parts storage units.

Also Reusable—Acme slotted angle can be dismantled and re-assembled for different applications in record time. The material is fully reusable.

Made from galvanized, cold rolled steel, the material has a recurring pattern of slots and holes to simplify assembly. Diamond-shaped cutting marks spaced at 3-in. intervals eliminate complicated measuring.

Acme slotted angle comes in two sizes and in 10- or 12-ft lengths. No. 225-80 is for standard structures, and 300-100 for heavy duty work. A package of ten 10-ft lengths, complete with nuts and bolts, occupies about the same amount of space as a single 2 x 4 of the same length.

Special Cutter—Slotted angle is easily cut to the exact length needed with a portable cutter supplied by

Acme. The tool leaves no sharp edges or burrs. A single down-stroke of the handle makes the cut.

Accessory steel panels are supplied in lengths from 36 to 60 in.,

6 in. wide. One-inch channels running the length of the panels provide rigidity. Other accessories made by Acme include casters for movable worktables and carts.



SPECIAL BINS: Segregated storage bin in motor room of 52-in. mill at the Homestead Works can be moved to wherever it's needed.

Insulation Stands Heat, Shock

Savings result when an inch of lightweight refractory does the job of 18 in. of brick.

Tests show a new silica foam-like solid resists thermal shock, acids, other punishment.

■ Intense heat and thermal shock have little effect on a new refractory-insulation. Of foamed, pure silica, it withstands shock within a —450° to 2200°F range. It doesn't warp, shrink or slump during rapid temperature changes.

The material's effective heat

range exceeds that practical for any other available insulation or refractory. So states Russel Brittingham, President, Pittsburgh Corning Corp., which developed the product in nine years of experiment. Called Foamsil, tests indicate 1 in. of it has insulating value of 18 in. of acid brick at a 250°F operating temperature.

Composed of 99 pct pure fused silica, the material can neither oxidize nor absorb moisture. Acids do not affect it with exception of hydrofluoric and hot phosphoric.

Cools To Solid—Foamsil is in

quantity production at the firm's Sedalia, Mo., plant. Using a special continuous horizontal electric furnace, the producer boils pure silica. Adding an agent foams it into millions of non-connecting bubbles.

On cooling, the mix turns into a lightweight, rigid, organic block with a closed cell structure. It may be cut with knives or saws. Dielectric constant of the end product is 1.155; loss tangent is 0.0003 (9.4 lb per cu ft density at 9400 MC/sec and 26°C).

Research shows it to be a very stable solid. Subjecting it to intense heat (i.e., from a steel-cutting oxyacetylene torch) and a water-quench won't crack or spall it.

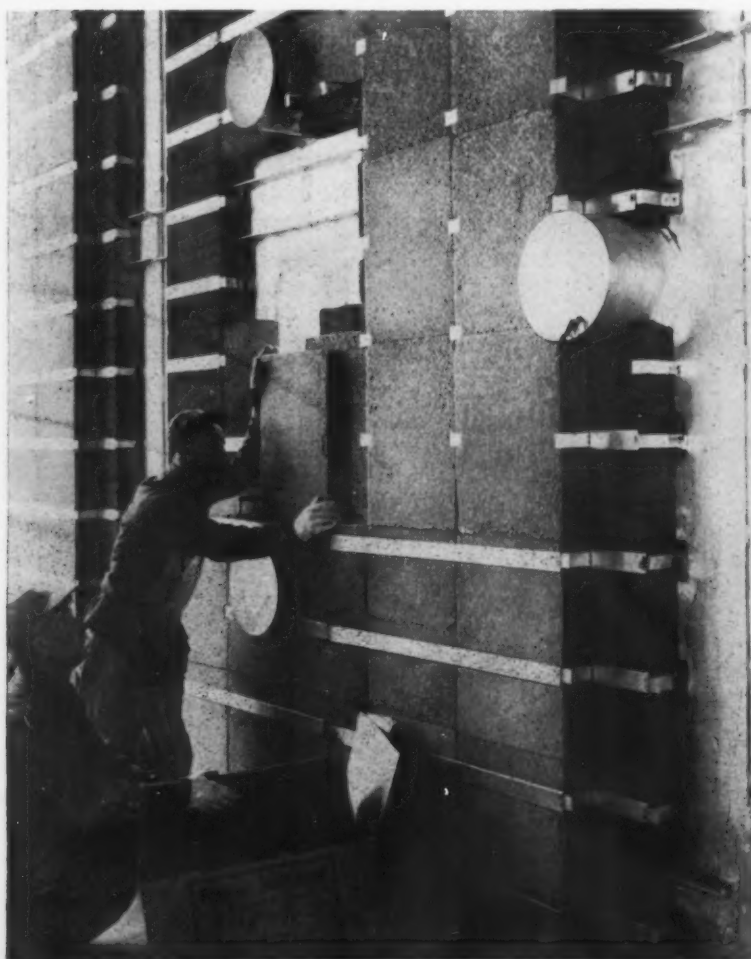
Doesn't Shrink in Heat—Volume stability through its entire heat range results from Foamsil's low expansion coefficient. This is 3.5×10^{-7} , about 1/18 carbon steel's. Up to 2200°F it actually expands.

Subject to 1600°F for more than two years in a test, it showed no sign of deterioration. Such stability means savings to users who now need expansion joints and vertical clearances. It also means no joint separations.

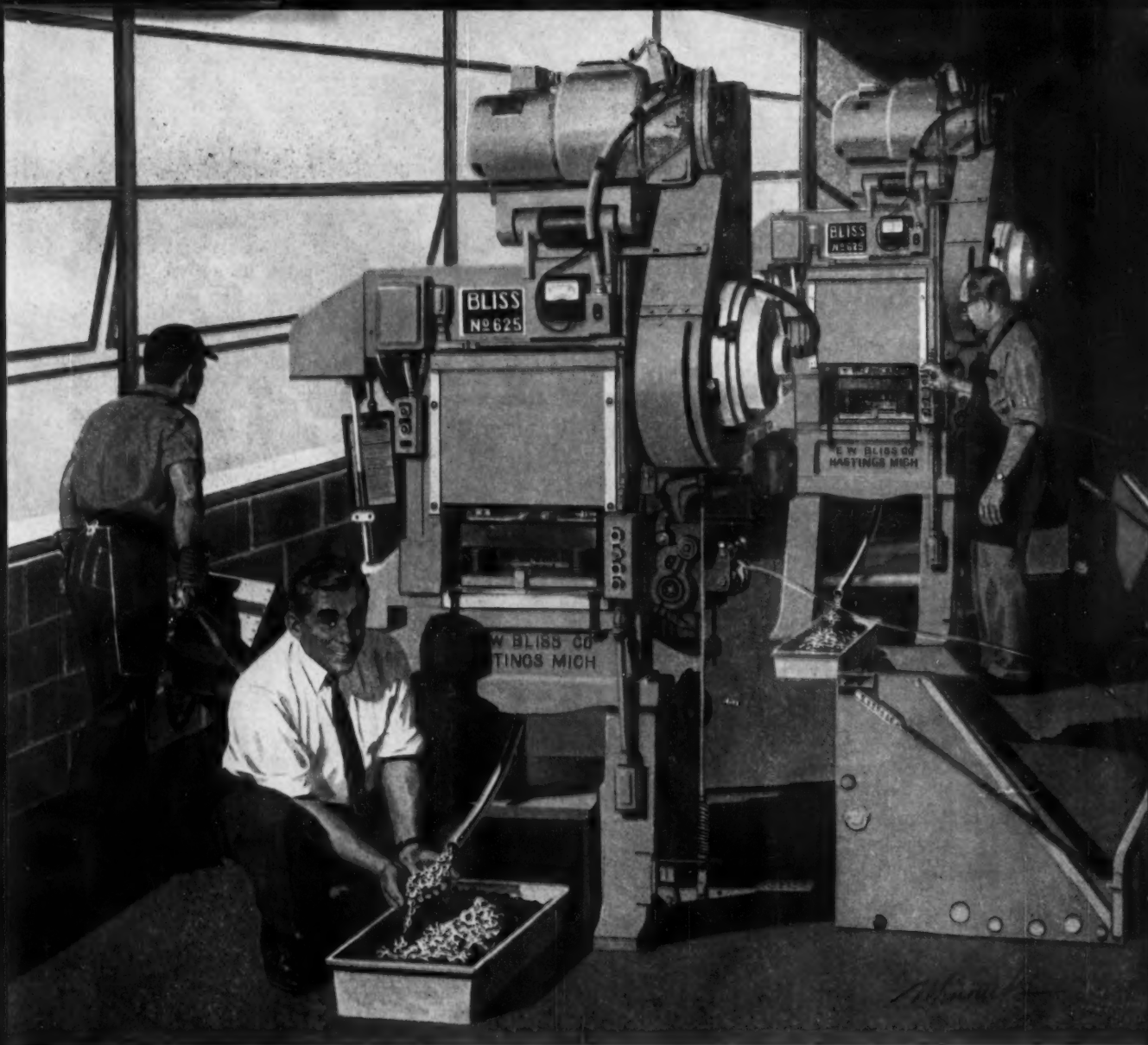
Can Support Itself—Lightweight (10 to 12 lb per cu ft), it has a 130 to 210 psi compressive strength. This lets it serve as a load bearer. Doing away with various supports could spell more savings.

Though first put into use lining tanks and pipes carrying hot acids and other chemicals, Foamsil is now under development for a wide range of uses in metalworking. Coke ovens, blast furnaces, electric furnaces and heat treat setups are but a few.

Concrete, brick or steel stacks can be lined readily with the material. Underground thermal and electrical insulation and high-temperature power installations are other potential uses.



FROM HOT TO COLD: Workers install foamed silica blocks on an aircraft test chamber. Operating temperatures vary from —100° to 1200°F.



"I get 1200 parts a minute from each of these presses...

...all day long!" And production like that continues day in, day out. For Bliss High Production presses are especially designed for continuous high speed operation. Counterbalanced shaft, massive tie rod frame...square gibbing...features like these add up to *enduring* speed. For ease of operation there's ample room in front and back for die setting and space *under* the press for tote boxes or stacking chutes. Naturally, if you use large quantities of stampings this is the press that makes them. You will, however, be surprised to learn, that H-P presses can be set up so quickly and efficiently that more and more firms are using them for short run work.



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Shops Print Aluminum Finishes

Aircraft makers usually call for aluminum items that will withstand lots of punishment.

But sometimes eye-appeal is more vital than strength.

■ Finishing different aluminum products can involve many processes. Not the least important of these is printing. Shops are now printing foil, sheet, plate and a wide variety of end-products.

Many of these end-products are in the form of printed matter: labels, magazine pages, newspaper inserts, food wrappers, and various packaging materials. Because of physical requirements, they are often produced from aluminum foil. Nearly half the aluminum foil produced in this country is used in some laminated form, states Aluminum Co. of America, Pittsburgh, which recently entered this field.

Opens New Plant — Alcoa's Davenport, Ia., works recently made

its first shipment of laminated foil to users in the insulation and printing industries. Bonded to paper or other materials, the new product comes in widths to 54 in. It's available in thicknesses from

of such foil. Alcoa expects sales to climb to the 300 or 400-million-lb mark annually over the next five to six years.

Aluminum Foil Ad — Use of aluminum foil advertisements in publications is growing. A short while ago, The Milwaukee (Wis.) Sentinel ran the first printed aluminum foil ad in newspaper history. The full-page 15 x 21½-in. insert was a lamination of foil on one side, paper on the other. Reynolds Metals Co., Louisville, and Robert A. Johnson Co., a food firm, sponsored the ad.

The foil side of the newspaper ad was reproduced in seven colors at Reynolds' St. Louis gravure plant; the Sentinel printed the other side as a regular part of its press run.

Convair Div., General Dynamics Corp., following the example of trade journal advertisers who have used foil ads for several years, introduced its new "880" jet transport plane to the public via an ad



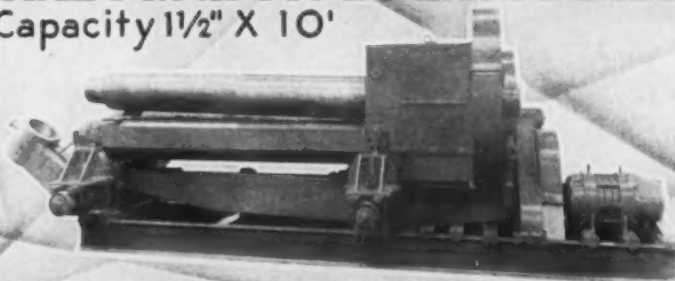
Pressman checks a metal-foil proof run off for Convair.

0.00025 to 0.001 in., to paper of any weight, or to paperboard.

Printers using gravure, flexographic or other types of equipment annually consume many tons

INITIAL PINCH TYPE PLATE BENDING ROLL

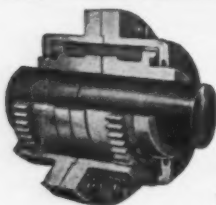
Capacity 1½" X 10'



Our Line

Light and heavy machinery for all classes of sheet metal, plate and structural work

BERTSCH & COMPANY, CAMBRIDGE CITY • INDIANA



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FLEXIBLE COUPLINGS

ALL SIZES AND TYPES
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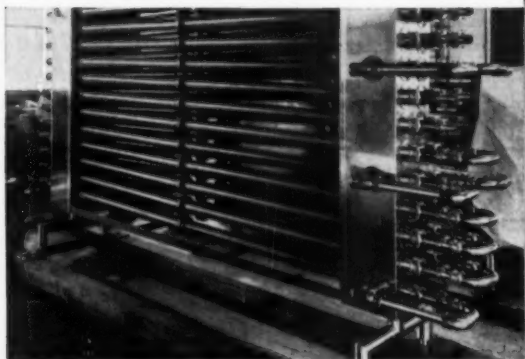
2520 East Hagert St.

Phone: Re 9-8911

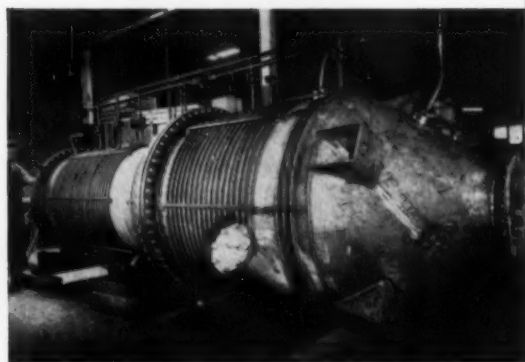
Phila. 25, Pa.



In dairy products, sanitation, non-contamination, heat and cold requirements dictate welded stainless steel tubing.



The uniformity, concentricity and dimensional accuracy, and easy fabrication of welded tubing serve best in this condenser.



This all-stainless steel resin distillation unit relies on welded stainless steel tubing for all tubular components.



Because of formability and resistance to heat, pressure and corrosion, welded stainless steel tubing makes up the greatest part of this valve—eliminates castings.

IT'S TIME...
TO DESIGN WITH
TUBING IN MIND

WHEN YOU MUST COMBAT

- CORROSION
- HEAT
- CONTAMINATION

USE



Where corrosion means contamination or failure—where instant sanitation is a must—where temperatures and pressures combine as key factors—where lifetime beauty and durability spell economy—use *welded* stainless steel tubing.

In all these applications for tubing, the uniformity, concentricity, dimensional accuracy and wide range of sizes, shapes and grades of *welded* stainless steel tubing serve best.

It's time to design with tubing from your quality *welded* tube producer.



Specific information on welded tubing is available on request to:

FORMED STEEL TUBE INSTITUTE

850 HANNA BUILDING • CLEVELAND, OHIO

An Association of Quality Tube Producers

LC-993

in Harper's Bazaar. Reynolds supplied foil for the ad and for a model of the "880" aircraft.

Prints Stripe Too—Foil is not the only aluminum form finished by printing. Aluminum cylinders, identification plates, thick plate products are imprinted with everything from identifying stock numbers to finished printed surfaces. A unique example of imprinted aluminum products is turned out

by Park Nameplate Co., Inc., New York.

To exhibit faith in its own products, the company prints its business cards on aluminum.

Rubber

Developed by Connecticut Hard Rubber Co., a new low durometer silicone rubber compound has compression-deflection characteristics approximating those of firm sponge.

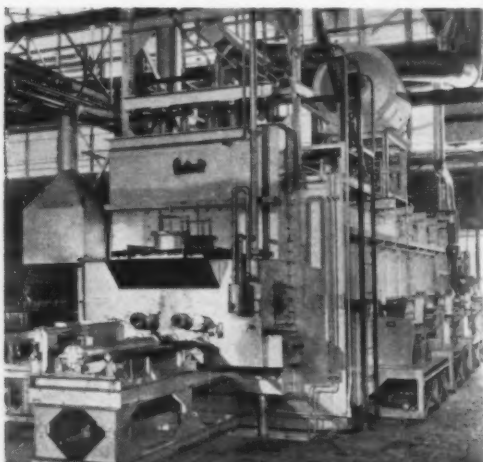
Yet it has high tensile, tear and elongation properties. Compression set properties of the new compound are outstanding, typical value being 30 pct of a 50 pct deflector after 70 hours at 300°F.

Packaging

Solves small parts packing problems

Automatic packaging of small mechanical items either in a single or multiple pack has scored considerable gains at a Phoenix, Ariz., plant. The company realizes substantial improvements on three counts: Better packaging; more efficient use of personnel; faster delivery.

In use at Airesearch Mfg. Div., Garrett Corp., the machine which makes this possible produces its



CONTINUOUS GAS CARBURIZER BY INDUSTRIAL HEATING EQUIPMENT CO. EQUIPPED WITH SPENCER BLOWER

SPECIFICATIONS

FURNACE	BLOWER
TYPE: Continuous tray pusher.	TYPE: Spencer Centrifugal Turbo-Compressor.
CAPACITY: Up to 2000 lbs. per hour of light case carburizing.	AIR DELIVERY: 1150 CFM @ 20 oz. pressure.
TEMP. RANGE: 1550-1700° F.	MOTOR: 10 HP; 1,750 RPM.
FUEL: 3,800 CFH natural gas.	

Costly, critical automotive transmission parts processed in this carburizing furnace require absolutely dependable combustion air delivery.

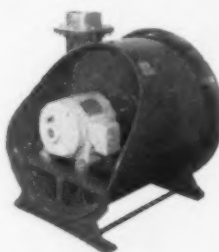
That's why... here and in countless similar applications where cost must be competitive but where there can be no compromise with quality... you'll find SPENCER blowers.

Metals men know from experience that the superior features of Spencer Turbo-Compressors—simplicity of design, wide clearances, all metal construction, uniform pressure under varying load conditions—are their assurance of continuous satisfactory performance.

Whatever your need in blowers—from 1/3 to 1,000 HP, volumes up to 20,000 CFM, pressures from 4 oz. to 10 lbs., it will pay to check with Spencer.

On Critical Applications Like this...

reliable SPENCER blowers



Worker feeds parts; unit automatically packages them.

own bags, prints them, feeds in the parts to be packaged, cuts bags apart, counts them and rejects empty bags. It does all this continuously at speeds up to 6000 bags an hour with a minimum of attention.

Bags are sealed on all four sides. They are dust and moisture proof and printed for quick identification.

Personnel Benefit—The old method of individually mimeographing envelopes, hand inserting, sealing and counting spare parts was a tedious, time-consuming job. Now, one operator feeds parts into a revolving

Request Catalog 126-A



The SPENCER TURBINE COMPANY
HARTFORD 6, CONNECTICUT

table. The table places each part on the lower web of the packaging material.

For small parts such as nuts, ball bearings, small-diameter O rings, etc., the operator can fill up the vibrating trough and parts will feed in automatically. One operator is sufficient to keep the machine running at full throttle.

Delivers Rapidly—When rush orders were processed in the past, extra shipping personnel had to be pulled off other assignments to lend a hand. In turn, other shipping schedules slowed down and deliveries in some cases were delayed.

With the new machine, parts personnel can handle volume orders of small parts in a hurry with no disruption of schedules.

The automatic packaging machines are manufactured by Product Packaging Engineering, Culver City, Calif.

Safety

Rolling Mill Handles Hot Steel Safely

Workmen in a large mill handle 1200°F steel with safety and ease in a banding operation. Wearing gloves of asbestos cloth treated with an aluminum-resin coating, employees have compiled a perfect safety mark.

Crucible Steel Co. of America, Midland, Pa., the user, rolls specialty steels on its 66-in. hot strip mill. Coils automatically position on a conveyor for banding.

Don't Touch Coils — Although the men aren't required to touch hot steel while banding, the gloves provide protection in the event a hand does contact the coils. Gloves also offer protection from radiating heat from coils as well as from the 2-in. wide bands. The latter reach nearly 300°F as a result of contact with hot steel.

Tests indicate the gloves, distributed by Mine Safety Appliances Co., Pittsburgh, improve wear of ordinary asbestos cloth from 27 to 297 pct.

Is Sheet Metal Scrap a Problem in Your Plant?



An Orderly Salvage Program... Built Around a G-H Hydraulic Baler ... *Could be the Solution!*

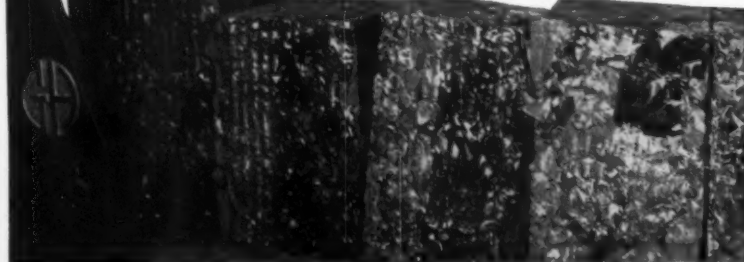
A well integrated scrap metal salvaging operation, built around the right kind and size of scrap metal baling press, may be the key to neat, orderly disposal of your sheet metal scrap . . . profitably . . . with minimum disturbance to production.

Galland-Henning Hydraulic Balers for sheet metal scrap are fast, powerful, rugged and efficient. They convert stampings, clippings and other light sheet metal scrap into dense compact bales always in demand by mills, foundries, and smelters.

For competent counsel on your scrap metal salvaging and baling operations . . . based on years of successful experience . . . write

GALLAND-HENNING MFG. CO.

2725 South 31st St. • Milwaukee 46, Wis.



GALLAND-HENNING SCRAP METAL BALING PRESSES

Filter Materials Resist Heat

New porous materials appear to make highly effective filters.

Even at 1830°F they filter 2 to 120 micron particles. And they are non-sloughing.

■ Porous materials with particle retention ranging from 2 to 120 microns are now being produced for industrial filter use. The materials perform like a mechanical screen. They are non-sloughing, an

important advantage to industries faced with the problem of shedding and passing of filter body particles.

Available from Corning Glass Works, Corning, N. Y., in a wide range of sizes and shapes, the materials combine high mechanical strength with chemical and thermal shock resistance.

They Filter Well—Their uniform structure provides accurate control over particle retention. A filter rated at 50 microns, for example, retains 98 pct of all particles larger than 50 microns.

The heat-resistant porous materials withstand temperatures up to 1830°F with no effect on physical structure.

Unusually strong, they have a specific gravity of 1.95. They can operate under high pressures. Laboratory tests on one of the materials give a modulus of rupture value of 3,230 psi at room temperature.



... To Your Specifications

ERIE Bolts • Studs • Cap Screws • Nuts

In Alloys • Stainless • Carbon • Bronze

Your most exacting specifications take precision form in the hands of our expert craftsmen. Bolts—Studs—Cap Screws—Nuts as specified to resist corrosion, extreme temperatures and tensile stresses are the product of more than 40 years continuous production of highest quality fasteners for a wide diversity of industries.

Send us your specifications for prompt estimate.



ERIE BOLT & NUT CO.

Erie, Pennsylvania

Representatives in Principal Cities

Fabrication

Another use for stainless—bodies for truck cabs?

Are stainless steel tractor-trailer cabs practical? Economical? These are questions being asked by producers and users of a new stainless cab.

Now hauling an aluminum trailer for Edgecomb Steel Co., Philadelphia, the cab was built by Autocar Div., White Motor Co. It's in regular daily use in all kinds of weather.

Want More Data?

You may secure additional information on any item briefed in this section by using the reply card on page 101. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

Preliminary testing indicates the cab shows considerable maintenance savings over the usual type cab.



Stainless steel skin gives this truck a new, polished look.

Aside from the maintenance factor, the gleaming stainless steel cab pays off as an attention-getter for the steel supplier.

Cermets

Strong, nonporous, well-bonded alumina-base cermets containing 50 pct oxide are a result of Air Force studies of wettability of aluminum oxide by various metals. Studies were made pre-reacting alumina with easily reducible oxides such as those of chromium, nickel, and cobalt. Specimens containing 50 volume pct of iron and 50 volume pct of oxide have been developed. Nearly nonporous, as strong as the metal alone, their high elastic moduli indicates good bonding.

More information on this is available in PB 131342 which is available from OTS, U. S. Dept. of Commerce, Washington.

Finishing

Non-fuming, a new aluminum bright dip eliminates corrosive brown nitrogen oxide fumes from the bath and work in transfer. Its developer, Conversion Chemical Corp., says the material is easy to control and stable enough to withstand effects of a weekend shut-down. There is little sludging or pitting with this safe, easy-to-use, powder, the firm says.

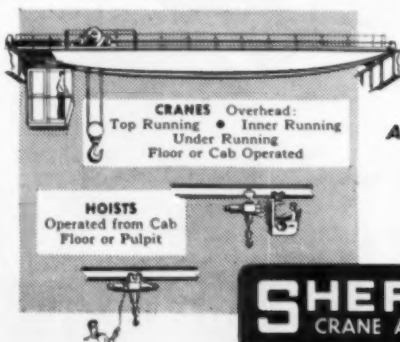
SHEPARD NILES

Large Industrial Cranes 1 to 450 TONS



FOR OVER 50 YEARS, Shepard Niles has been a distinguished name in cranes. A pioneer in the overhead crane industry, Shepard has never failed to modernize and progress through the years. Today its cranes serve thousands of satisfied users, plus an ever-increasing number of new customers.

Shepard offers a complete line of heavy industrial cranes . . . from 1 to 450 tons . . . for light, medium or heavy service. Available for constant or intermittent duty in slow, medium and high speeds; operated from cab or floor. Let a Shepard Niles representative help you select the crane that best fits your plant's load-handling requirements.



• Write for latest Bulletin . . . request a representative to call.

**America's Most Complete Line
of Cranes and Hoists
Since 1903**

SHEPARD NILES

CRANE AND HOIST CORPORATION

1484 Schuyler Ave., Montour Falls, N.Y.

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 101.

Worm Gears

"Why worm gear?" asks an 8-page bulletin. Then it tells why, covering worm gearing in general, pointing out advantages. (Cleveland Worm & Gear Co.)

For free copy circle No. 1 on postcard, p. 101

Plant Location

In the area around Harrisburg, in Central Pennsylvania, are extensive facilities for transportation,

power, manufacturing and selling. Centrally located as to wealthy markets, this area is also a place to buy necessary supplies and services. Natural resources abound, as does skilled labor. Vital data on this area is supplied in a brochure aimed at new plant site seekers. (Penna. Power and Light Co.)

For free copy circle No. 2 on postcard, p. 101

Heat-resist Chain

Heat-resistant chain which gives 33 1/3 pct more heat transfer surface is analyzed in a bulletin. (Allis-Chalmers Mfg. Co.)

For free copy circle No. 3 on postcard, p. 101

Drill-press Vise

Quick adjustment drill-press vises

are among new products in a catalog. Also covered: lathe chucks, dividing heads, milling machine vises and magnetic chucks, demagnetizers and rectifiers. (L-W Chuck Co.)

For free copy circle No. 4 on postcard, p. 101

Barrel Plating

A dozen-page bulletin deals with barrel plating equipment. This rather complete bulletin could be used widely as a check on methods now employed and equipment now in use. (The Udylyte Corp.)

For free copy circle No. 5 on postcard, p. 101

Drilling Machines

Variable speed sensitive drilling machines are described in new literature. These multiple spline spindle units have a wide speed range: to 2100 rpm. (Lennox Tool & Machine Builders).

For free copy circle No. 6 on postcard, p. 101

Vertical Profiler

Tracer controls for automatic 360° profiling make a new vertical profiler extremely versatile. Operating from a sheet steel profile template, it can produce any two-dimensional shape at up to 60 ipm. Accuracy is high. (Pratt & Whitney Co., Inc.)

For free copy circle No. 7 on postcard, p. 101

Batteries

Slyver-clad batteries for railroad car lighting and air conditioning are dealt with in a 4-page folder. Slyver is infinitely fine, parallel glass fibers in a unique arrangement. Batteries using Slyver are said to last longer, cost less. (C & D Batteries, Inc.)

For free copy circle No. 8 on postcard, p. 101

Castings

High-tensile castings are featured in a company publication.

PUNCHES · DIES · RIVET SETS COMPRESSION RIVETER DIES

Made to highest standard
and uniform quality thus insuring
maximum service.



Since 1903

Rivet sets—round, square, oblong Punches,
and Dies carried in stock.

Write Dept. B for catalog 54
and new stock list.

GEO. F. MARCHANT COMPANY
1420-34 So. ROCKWELL STREET · CHICAGO 8, ILLINOIS

It shows castings with a minimum 50,000-psi tensile strength. (Kutztown Foundry & Machine Corp.)

For free copy circle No. 9 on postcard, p. 101

Data Processing

Keysort tabulating equipment is described in a colorful folder. This equipment speeds vital data from plant to management. (Royal McBee Corp.)

For free copy circle No. 10 on postcard, p. 101

Furnaces

Controlled atmosphere furnaces appear in a bulletin. These continuous rotary retort units have 150 to 400 lb per hour capacities. (American Gas Furnace Co.)

For free copy circle No. 11 on postcard, p. 101

Electric Furnaces

Electrically heated, conveyor-type furnaces presented in a bulletin handle to five times the loads of other furnaces. They perform bright heat treatment of stainless steel, copper brazing of stainless steel, micro-brazing, and high-temperature nickel alloy brazing applications. (C. I. Hayes, Inc.)

For free copy circle No. 12 on postcard, p. 101

Machine Welding

A 6-page brochure presents functions and services of a firm's machine welding department. (Air Reduction Co.)

For free copy circle No. 13 on postcard, p. 101

Surface Plate

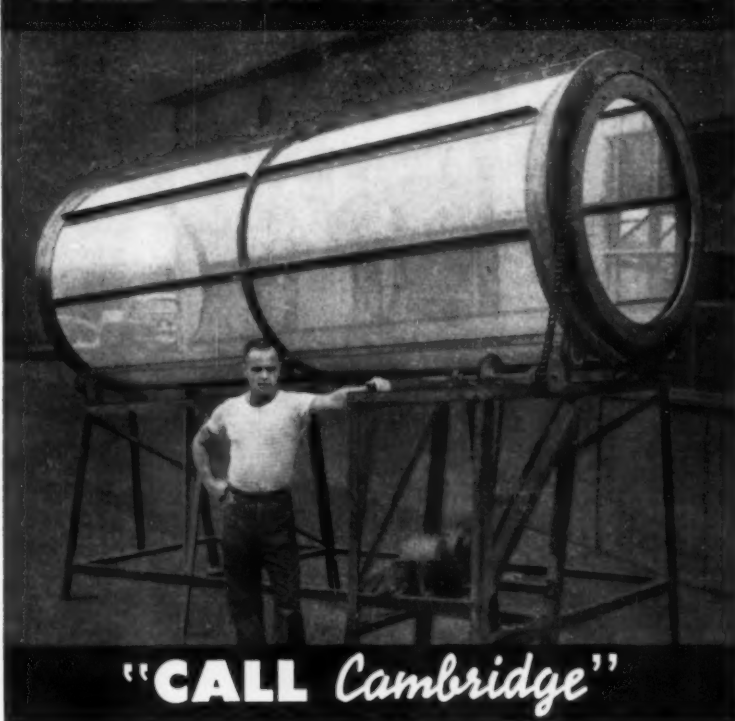
Black granite surface plates are so popular that one maker has added a small plate for bench use to its products. Compact in size (8 x 12 x 2 in.), it's easily portable. Tolerance is ± 0.0002 in. over-all. A brochure gives details. (Collins Microflat Co.)

For free copy circle No. 14 on postcard, p. 101

Air-run Pumps

Air-motor operated lubricant pumps are offered in a catalog. It covers 67 new pumps and allied equipment. The latter includes an air operated pressure primer for

"WIRE CLOTH FABRICATIONS?"



"CALL Cambridge"

**"You tell us what you need,
and we'll have it for you fast—
whatever the size or shape"**

Roland's right, too. Here at Cambridge he's part of a team that has produced everything from thimble-sized strainers to king-sized dewatering screens, often well ahead of schedule. Whatever your requirements, you're assured of quality workmanship and prompt service when you call Cambridge. And, we'll work from your specifications or draw up prints for your approval.

TO MEET YOUR BULK WIRE CLOTH NEEDS, we have a wide variety of specifications from the finest to the coarsest mesh—in any metal or alloy—in the most frequently used specifications ready for immediate shipment. Individual loom operation and careful inspection just before shipment assures accurate mesh count and uniform mesh size.

Let us quote on your next order for wire cloth. Call your Cambridge Field Engineer listed in the telephone book under "Wire Cloth". Or write direct for FREE 94-PAGE CATALOG and stock list giving the full range of wire cloth available. Describes fabrication facilities and gives useful metallurgical data.

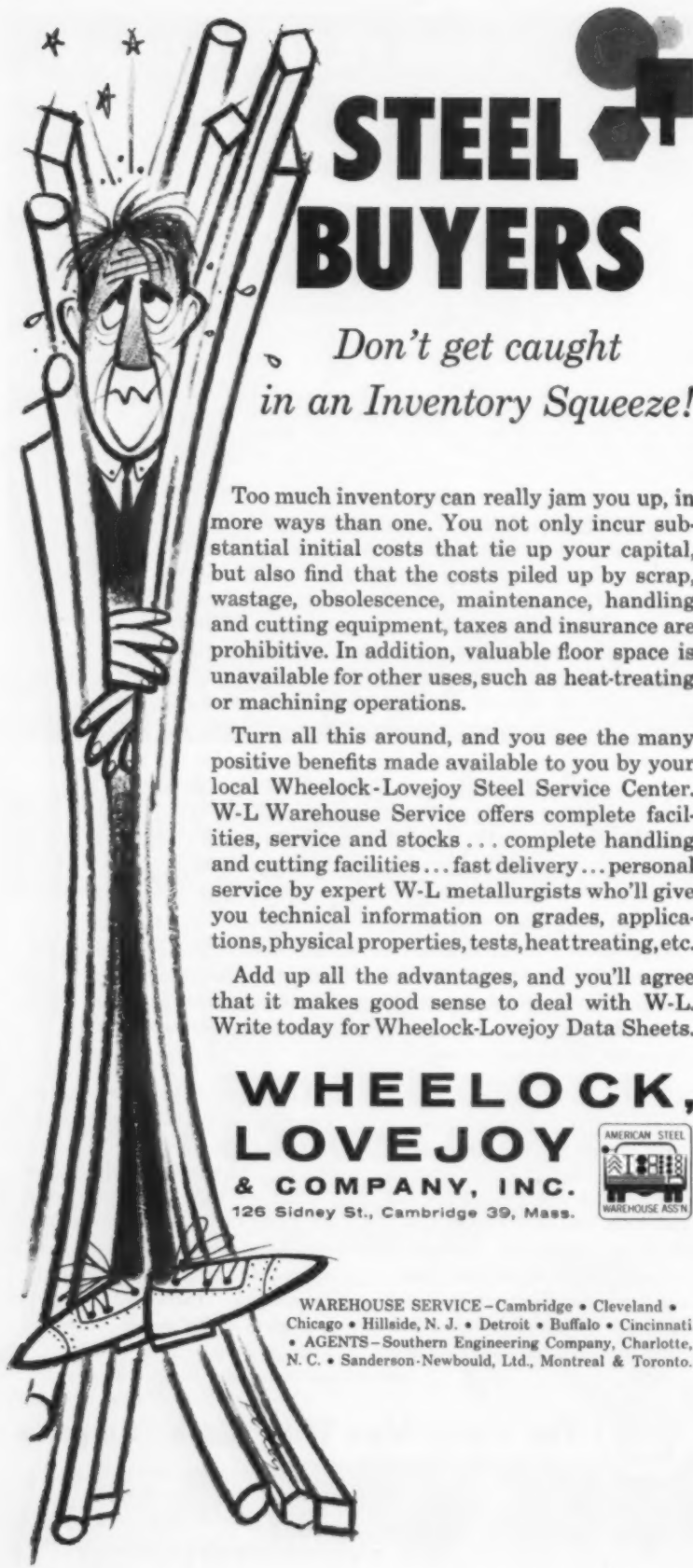


The Cambridge Wire Cloth Company



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MARYLAND

OFFICES IN PRINCIPAL INDUSTRIAL CITIES



STEEL BUYERS

*Don't get caught
in an Inventory Squeeze!*

Too much inventory can really jam you up, in more ways than one. You not only incur substantial initial costs that tie up your capital, but also find that the costs piled up by scrap, wastage, obsolescence, maintenance, handling and cutting equipment, taxes and insurance are prohibitive. In addition, valuable floor space is unavailable for other uses, such as heat-treating or machining operations.

Turn all this around, and you see the many positive benefits made available to you by your local Wheelock-Lovejoy Steel Service Center. W-L Warehouse Service offers complete facilities, service and stocks... complete handling and cutting facilities... fast delivery... personal service by expert W-L metallurgists who'll give you technical information on grades, applications, physical properties, tests, heat treating, etc.

Add up all the advantages, and you'll agree that it makes good sense to deal with W-L. Write today for Wheelock-Lovejoy Data Sheets.

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FREE LITERATURE

pumping extra heavy lubricants and "non-flowing" compounds. (Lincoln Engineering Co.)

For free copy circle No. 15 on postcard, p. 101

Flame-Cutting

Cut your flame-cutting costs! That's what a new 12-page folder advises. It reviews ways the right nozzles can reduce gas consumption and nozzle replacement. (Linde Co.)

For free copy circle No. 16 on postcard, p. 101

Compressors

Heavy-duty high pressure stationary compressors are outlined in an 8-page bulletin. Four basic models range from 368 to 2000-cfm capacity. (Joy Mfg. Co.)

For free copy circle No. 17 on postcard, p. 101

Flow Meter

Bellows meters detailed in a 20-page catalog come in two basic models. One handles flow, and liquid level in open tanks; the other, liquid level in closed tanks under pressure or vacuum. (Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 18 on postcard, p. 101

Tiny Reamers

Miniature fluted reamers featured in a bulletin are suited to production of miniature products. Diameters range from wire gage sizes No. 80 (0.0135 in.) through 61 (0.0390). (Laval & Ide, Inc.)

For free copy circle No. 19 on postcard, p. 101

Two-way Radio

Portable two-way radios introduced in a bulletin have completely transistorized receivers. (Communication Products Dept., General Electric Co.)

For free copy circle No. 20 on postcard, p. 101

Curtain Walls

Curtain walls of aluminum and of steel are shown in a 24-page brochure. (Ceco Steel Products Corp.)

For free copy circle No. 21 on postcard, p. 101

Better Saw Blade Performance

GUARANTEED

by DoALL's built-in quality!

Tooth set guaranteed within a $\pm .002''$ tolerance assures accurate sawing . . . longer cutting life . . . uniform kerf size . . . and finest surface finish.

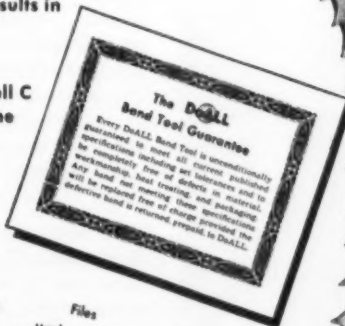
Sharpest, toughest, most durable teeth are obtainable only from DoALL's modern technology and exclusive manufacturing processes.

Shape-engineered gullets assure smooth, uniform chip flow at faster cutting speeds. Gullet design, developed after photoelastic stress analysis, results in increased tooth strength and greater flex life.

Controlled tooth hardness is 61 to 63 Rockwell C for longest cutting life. Uniform tempering of the flexible back insures maximum flex life.

To guarantee the quality of DoALL Saw Blades, they must pass 83 separate control checks made at every step of the way—from raw material analysis to final package inspection. DoALL Saw Blades must pass every known test to prove their right to carry the DoALL label—your identification of the finest in saw blades.

DoALL makes 18 types of band tools in more than 300 width-pitch-set combinations. Ask for the DoALL Saw Blade Selector Chart. It's free!



Did you know?
The nation's finest, fastest, most convenient and complete saw blade service is at your local DoALL Store.





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fabricator for
WELDED

PRECISION ASSEMBLIES

As a major supplier of millions of rings, bands and welded assemblies to the aircraft industry, American Welding developed highly successful techniques for producing circular parts and components. Today they are applying these skills to the problems involved in missile production. These facilities, which include metal forming, welding, and machining, are available on a sub-contract basis. Complete metallurgical and engineering staffs, plus a work force skilled in the fabrication and welding of stainless steel, titanium, aluminum, and heat-resistant alloys, are ready to work with you. And, along experimental lines, American Welding operates a separate department for exploring new possibilities of fabricating by welding.

If you would like to obtain complete information on the capabilities of American Welding and how we can be of assistance to you—phone or write today. Our local representative will be happy to call and discuss your requirements.

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COMPLETE
INFORMATION**



NEW
20-page catalog of
Amweld Welded
Precision Assemblies,
Rings and Bands.

NEW
booklet entitled, "HOW
AMWELD FLASH
BUTT-WELDED RINGS
ARE PRODUCED".

THE AMERICAN WELDING & MFG. CO.
120 DIETZ ROAD • WARREN, OHIO

AMERICAN WELDING

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Power Presses

Power Presses are detailed in a folder. Inclinable presses in both fly wheel and back geared types in 16 to 150-ton capacities are described. (Johnson Machine & Press Corp.)

For free copy circle No. 22 on postcard

Roller Conveyor

Stock roller conveyors are covered in a 8-page booklet. Also detailed: straight sections, curves and supports. (Logan Co.)

For free copy circle No. 23 on postcard

Boiler Tubes

Welded carbon steel boiler tubes are reviewed in a data card. It lists maximum working pressures, by popular tube sizes, for electric resistance-welded boiler tubing. (Tubular Products Div., Babcock & Wilcox Co.)

For free copy circle No. 24 on postcard

Precision Gears

Fine-pitch precision gears made by one company are listed in a brochure. These gears range from P1 to P4 AGMA standards, 300 to 24 diametral pitch, 0.0625-in. diam up. (Western Gear Corp.)

For free copy circle No. 25 on postcard

Grinder Controls

Automatic grinder controls for ID, OD and surface grinding are illustrated in a 4-page folder. A complete line of these systems are available, ranging from simple machine shut-off or alarm, to size indication and segregation, to auto-

matically self-compensating gaging and control. (Radio Corp. of America.)

For free copy circle No. 26 on postcard

Flash Butt Welder

A new design flash-butt welder is illustrated in bulletin. Included are design features, specifications, welding capacities and electrical data. (Federal Machine & Welder Co.)

For free copy circle No. 27 on postcard

Casters, Wheels

Casters and wheels are subjects of a 32-page catalog. Tables present information on rated capacity, type of wheel, weight and model number. (Rapids-Standard Co.)

For free copy circle No. 28 on postcard

Copper-Clad Laminate

"A Better Foundation For Printed Circuitry" is a 6-page folder. It describes copper-clad phenolite. (National Vulcanized Fibre Co.)

For free copy circle No. 29 on postcard

Crane Rails

In 22 pages, a booklet points out that crane rail making is different from railroad rail making. It provides directions for jointing, welding, selection of proper section, etc. (Bethlehem Steel Co.)

For free copy circle No. 30 on postcard

Battery Racks

It's sound engineering practice to mount stationary-type storage batteries on racks. So says a 12-page catalog. It cites simple maintenance and high, deliverable voltage as key advantages of rack-mounting. (Exide Industrial Div., Electric Storage Battery Co.)

For free copy circle No. 31 on postcard

Handling System

Highly flexible to meet ever-changing plant operations, a new materials handling setup is described in a new case history report. Based on a system at Midland Steel Products Co., the report details methods

Postcard valid 8 weeks only. After that use own letterhead fully describing item wanted. 8/7/58

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FREE LITERATURE

which handle nearly 250,000,000 lb of material annually within and between five buildings. (Elwell-Parker Electric Co.)

For free copy circle No. 32 on postcard

Stainless

Data sheets in a new series cover 17 stainless steels. An accompanying 8-page guide indicates their corrosion-resistance to various chemicals. (Jones & Laughlin Steel Corp.)

For free copy circle No. 33 on postcard

Aluminum Job Shop

Engineering services and metal-working tools available at a major aluminum jobbing shop are outlined in a 14-page booklet. It depicts a setup for designing, forming, joining and finishing aluminum. (Aluminum Co. of America)

For free copy circle No. 34 on postcard

Dryers, Heaters

Ovens, dryers and heaters are covered in an 8-page booklet. These produce "engineered atmospheres" for paint finishing, hot blast cupola operations, fume incineration, and other processes. (J. O. Ross, Engineering Div., Midland-Ross Corp.)

For free copy circle No. 35 on postcard

Electrode Clamp

An 8-page booklet cites economy and safety of using automatic electrode positioning. (Whiting Corp.)

For free copy circle No. 36 on postcard

Stainless

Information on corrosion resistance of 34 stainless grades is contained in a new data chart. (Peter A. Frasse & Co., Inc.)

For free copy circle No. 37 on postcard

Automatic Presses

A 22-page booklet details a line of automatic press room equipment. It covers: slide feeds, roll feeds, air-operated feeds, stock straighteners, stock reels, coil cradles, combina-

tion cradles and straighteners. (U. S. Tool Co., Inc.)

For free copy circle No. 38 on postcard

Silicone Insulation

Silicone insulation is winning widespread use in original equipment. The reason: economy—both initially and over the long haul. So points out an interesting 8-page bulletin. (Dow Corning Corp.)

For free copy circle No. 39 on postcard

Decimal Equivalents

A combination decimal equivalent chart and calendar is available. The calendar starts with July 1958 and runs through June 1959. (For free copy write on company letterhead to Dayton Rogers Mfg. Co., Minneapolis 7, Minn.)

Cemented Oxide

Grade 0-30 cemented oxide inserts, blanks and cylinders are listed in a pricing folder. Product data, application sheets and technical information sheets also are part of the folder. (Metallurgical Products Dept., General Electric Co.)

For free copy circle No. 40 on postcard

Honeycomb Milling

Gantry type honeycomb contour milling machines are offered in an 8-page catalog. It gives specific data on contour machining of unsupported honeycomb cells. (Onsrud Machine Works, Inc.)

For free copy circle No. 41 on postcard

Band Saw Guides

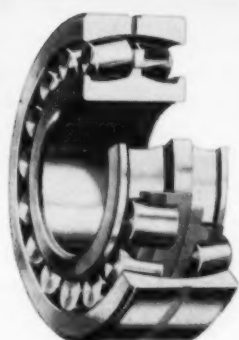
A catalog and operating manual features an extensive line of band saw guides. (Carter Products Co., Inc.)

For free copy circle No. 42 on postcard

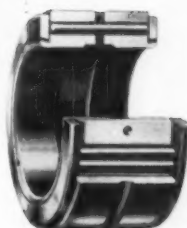
Clamps, Couplings

Clamps, couplings and joints featured in a file folder are for industrial uses. (Marman Div., Aeroquip Corp.)

For free copy circle No. 43 on postcard



from
power shovels...



to
helicopters

Torrington makes the right anti-friction bearing for every basic need!

Application requirements differ. A lightweight, high-capacity Torrington Needle Bearing is just right for a helicopter. But it's a different story with a mammoth power shovel, where Torrington Spherical Roller Bearings or Tapered Roller Bearings perform best.

Between these two examples lie all kinds of requirements. To meet the broad range of needs, Torrington makes every basic type of anti-friction bearings.

This range of experience can be of invaluable service to you in engineering your own anti-friction applications. Your Torrington representative is well qualified in your field: call on him for engineering assistance. **The Torrington Company, Torrington, Conn.—and South Bend 21, Ind.**

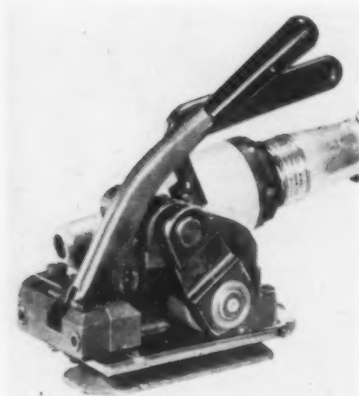
TORRINGTON BEARINGS

District Offices and Distributors in Principal Cities of United States and Canada

SPHERICAL ROLLER • TAPERED ROLLER • CYLINDRICAL ROLLER • NEEDLE • BALL • NEEDLE ROLLERS • THRUST

New Production Ideas

Equipment, Methods and Services



Steel Strapping Units Handle Heavy-duty Jobs

Easy, quick loading is a key feature of a new tensioning tool for heavy-duty strapping. It saves several cents worth of strapping on each operation, too. The tool eliminates scrap curls. Other advantages: No limit to amount of strapping that can be taken up. The operator needn't know in advance how long the strap should be. A powerful air motor performs tensioning. A built-in scrap cutter works with a very light touch. The tool has been

field-tested in eight months of steel mill service. It's fast and easy to use: (1) strapping directly from the coil; (2) using cut-to-length strap; or (3) strapping "pre-draped" on the packages. Weighing 20 lb, it handles 1¼-in. heavy-duty strapping. It's particularly suitable for strapping heavy sheet packs, heavy skid or pallet loads, and large crates. (Signode Steel Strapping Co.)

For more data circle No. 44 on postcard, p. 101

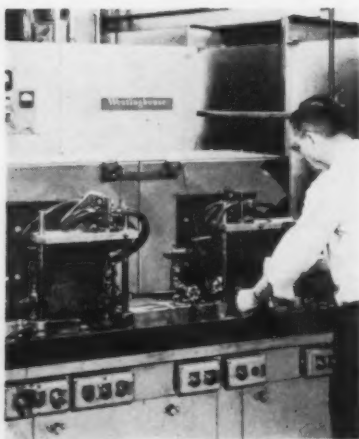


Deburrers Cut Smooth Corners on Workpieces

Three new power deburrers cut smooth corners on workpieces of metal, plastic, nylon, etc. They do this at high speed without sacrificing safety. The units give a smooth, uniform finish in only one pass. One model is portable; it uses a carbide cutter and "V" guide. It makes a smooth, continuous 45° angle. Cut is from zero to 1/16-in. A 110-hp motor powers it. Weight: 5 lb. A second model is larger; cut is from zero to ¼-in.; weight is

about 22 lb; motor, ¼-hp. Still a third model is a compact floor unit. Powered by a ¼-hp motor, it has unlimited capacity on all external straight or round edges. It comes with a standard carbide cutter; a 60-grit grinding wheel handles extremely hard surfaces. Range is zero to ¼-in. cut in hard steel. An adjustable guide gives right cutting angle. (Sigwell Corp.)

For more data circle No. 45 on postcard, p. 101

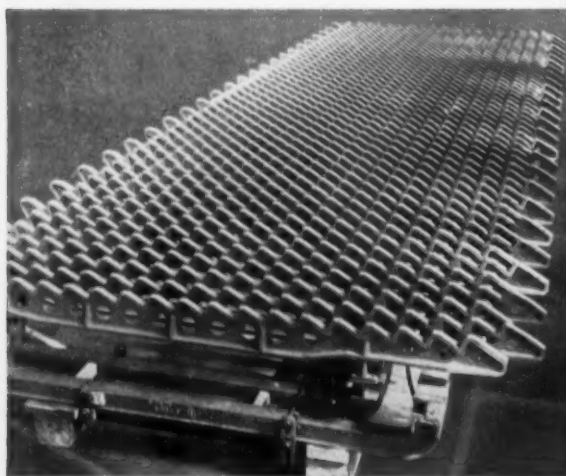
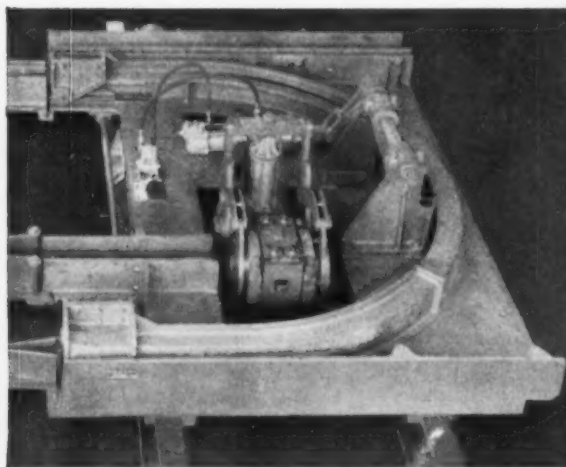
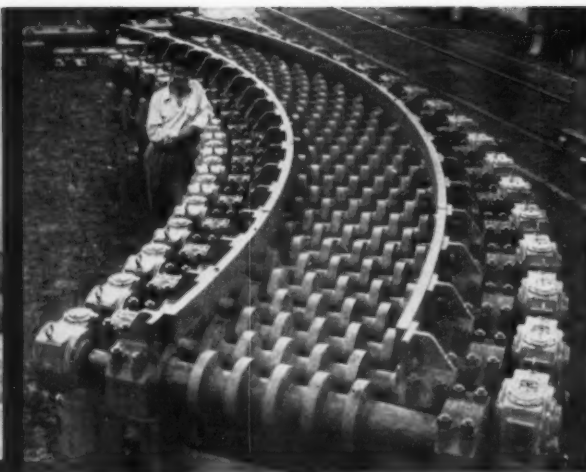
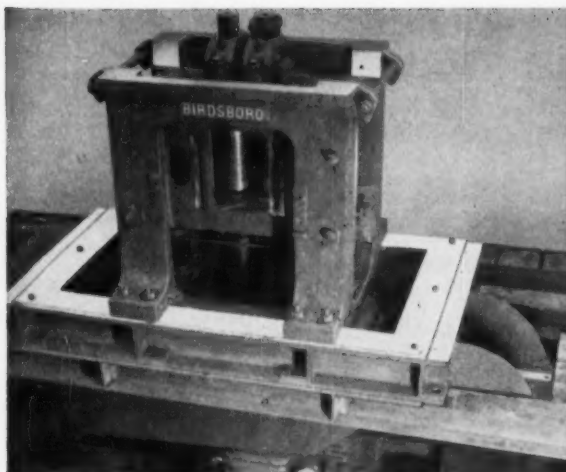


Equipment Radio-Frequency Hardens Auto Parts

Equipment for radio-frequency hardening of automobile parts has been installed at a large midwestern auto parts plant. The equipment is one of a series of automatic and semiautomatic tools engineered to solve hardening problems. For this particular application, induction hardening of the internal spline of a universal joint yoke, the maker has supplied a 50-kw, 450-kc radio frequency generator, a dual position worktable, two lift-rotate spindles and special fixtures. The r-f genera-

tor and its associated output transformers (located in the worktable) supply the concentrated power necessary for high-speed surface hardening. The entire operation is semiautomatic, requiring only manual loading and unloading of the work. During the entire process, the operator handles only two controls—the start-stop pushbutton for each work position. All other adjustments are preset. (Westinghouse Electric Corp.)

For more data circle No. 46 on postcard, p. 101



*there's a spot in your
rolling mill layout where
creative engineering
can cut costs*

● This cost-cutting creativity is an integral part of Birdsboro engineering service. Only by increasing productivity *economically* will you be able to operate profitably in the future. New developments in automated and semi-automated mill machinery can key up your entire mill to new profit levels.

For complete information on a single unit or an entire mill, contact your Birdsboro representative. *Main Office, Engineering Department and Plant: Birdsboro, Pa., District Office: Pittsburgh, Pa.*

MM-68-58

BIRDSBORO
STEEL FOUNDRY AND MACHINE CO.

STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY •
STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

B

NEW EQUIPMENT

Ultrasonic Tank

With a 5-gal capacity, a new ultrasonic processing tank has a stainless steel treatment chamber 14 long x 9 wide x 10-in deep. Heliarc welded to aircraft specifications, it's fitted with two welded stainless steel drain connections for recirculation of process liquids. The unit

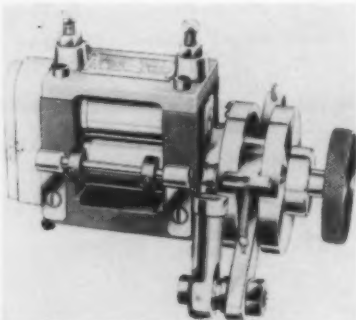


is fully powered by a generator with an output of 400 watts continuous at 20 Kc/sec. Power connections to the tank are by a heavy duty waterproof connector. This tank is recommended for high quality, low cost cleaning of ball bearings, electronic tube parts, gyros, semiconductors, jet engine parts, etc. (General Ultrasonics Co.)

For more data circle No. 47 on postcard, p. 101

Roll Feeds

Available in 26 new sizes, one manufacturer's automatic roll feeds for punch presses now come in 39



standard sizes. The roll feed line has a range of feed increments from 1 to 20-in. long, up to 20-in wide. These feeds, for side or rear feed-

ing, fit any light or heavy duty punch press. All attachments for installing—including the crank shaft disc and connecting linkage—are furnished. (Jaco Devices, Inc.)

For more data circle No. 48 on postcard, p. 101

Drill Stop

When multiple drilling operations require different depths on any one spindle, a turret depth stop can simplify operations and prevent errors. With the stop even an inexperienced operator drills to correct depth. The stop mounts on front of the sliding arm. It has four positions. Each can be set for a predetermined depth. By manually rotating to its number position, each preset depth can be repeated accurately as many times as required. (Edlund Machinery Co.)

For more data circle No. 49 on postcard, p. 101

Retaining Rings

A retaining ring kit contains 376 cadmium plated retaining rings. Sizes are packed individually in numbered envelopes. Shaft sizes run from 1/4 to 2 1/2-in. in internal, external and universal crescent ring designs. These represent approximately 70 pct of rings generally used. (Bearings, Inc.)

For more data circle No. 50 on postcard, p. 101

Borescopes

A new borescope allows precision internal visual inspection of many items. It aids inspection of: blind rivets, parts, propellers, blades, chambers, cylinders, extrusions, guns, tubes, pipe, furnaces, bores, forgings, castings, and machined parts. A folder describes the devices. (Lenox Instrument Co.)

For more data circle No. 51 on postcard, p. 101

Dewpoint Control

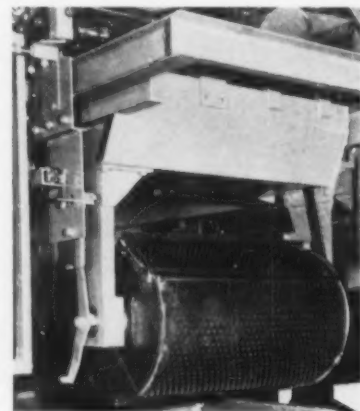
Controlling atmosphere dewpoint and carbon potential is the job of a new instrument. It consists of two complete atmosphere sampling, analyzing, and controlling means. These register on a two-record strip chart indicator and controller. Substituted where two individual units

were required, it can simultaneously control endothermic type special gas atmospheres as sampled from two generators, one generator and a related or separate furnace, two furnaces, or two zones in the same furnace. (Ipsen Industries, Inc.)

For more data circle No. 52 on postcard, p. 101

Processing Barrel

Metal processing barrels in a new design boast a horizontal barrel door that opens and closes automatically. Proven in actual production use, the barrels handle cleaning, phosphating, blackening, Lubrite, Bonderizing, chromate treatments, pickling and similar jobs. After loading, a signal starts the barrel rotating. Rotation actuates a door-closing mechanism. A detent spring holds the barrel door secure

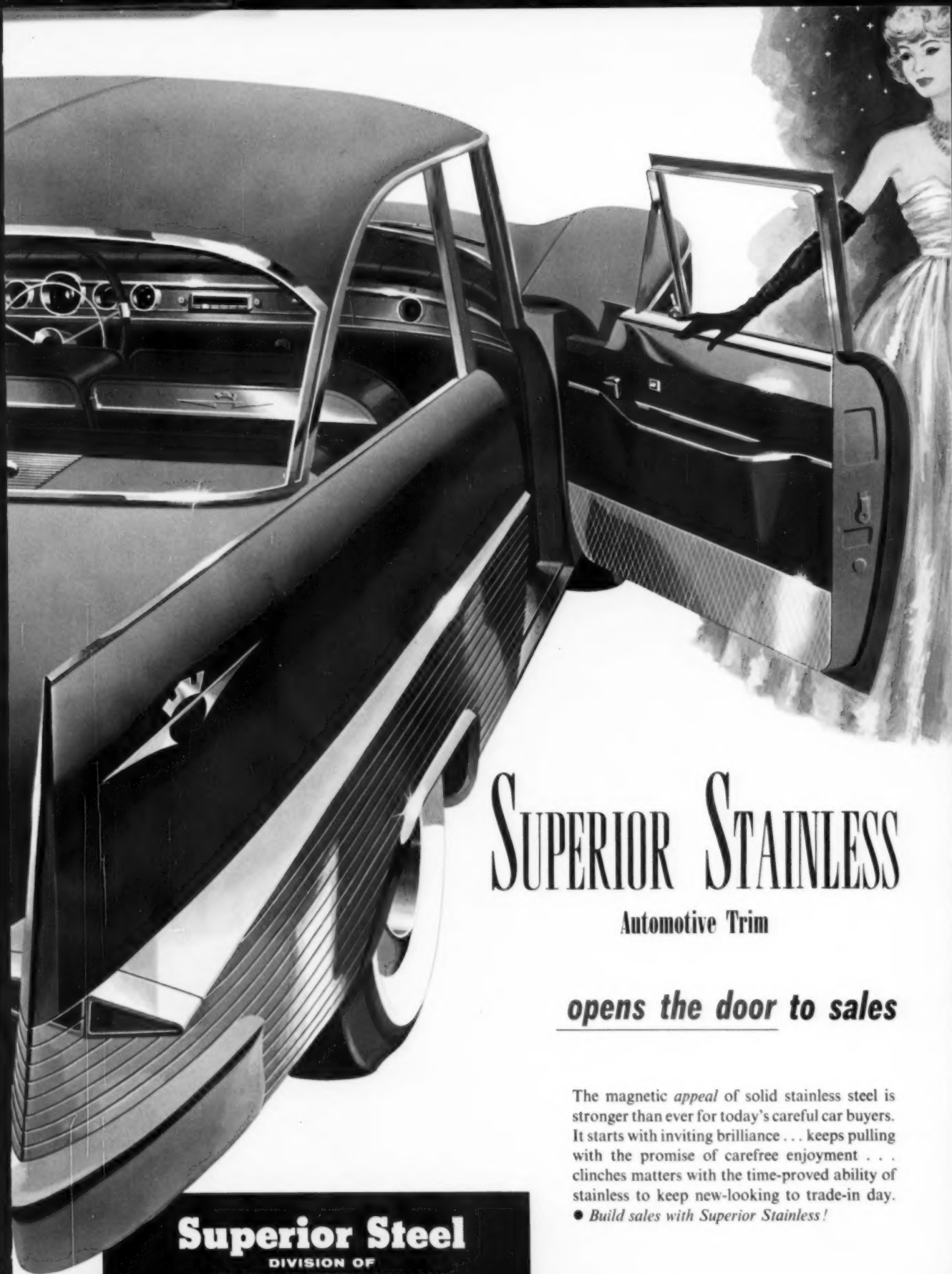


during the cycle. On completion, barrel rotation reverses to open the door and discharge the load. Because of its automatic features, the barrel lends itself to automated setups (i.e., automatic hopper feeding, automatic unloading to hoppers or conveyor belts). The barrel handles heavy loads of large or small parts. (Hanson-Van Winkle-Mun-ning Co.)

For more data circle No. 53 on postcard, p. 101

New Arc Welder

Using a new submerged arc welder on a variety of work previously welded with manual electrodes, one shop reduces welding costs by as much as two-thirds. The unit's speed, penetration and high operating factor get the credit



SUPERIOR STAINLESS

Automotive Trim

opens the door to sales

The magnetic *appeal* of solid stainless steel is stronger than ever for today's careful car buyers. It starts with inviting brilliance . . . keeps pulling with the promise of carefree enjoyment . . . clinches matters with the time-proved ability of stainless to keep new-looking to trade-in day.

● *Build sales with Superior Stainless!*

Superior Steel

DIVISION OF
COPPERWELD STEEL COMPANY
CARNEGIE, PENNSYLVANIA

For Export: Copperweld Steel International Company, New York



Take heavier cuts at higher speeds, even on toughest alloys—with

NEW GULFCUT HEAVY DUTY SOLUBLE OIL

Here's a heavy duty emulsifying cutting oil that consistently produces better results. Gulfcut Heavy Duty Soluble lets you make heavier cuts at higher speed—even on chrome-nickel steels and other tough alloys.

You'll get finer finishes and longer tool life, too, with Gulfcut Heavy Duty Soluble Oil. Here's why it does a better job than other emulsifying oils.

- **HIGH SURFACE-WETTING PROPERTIES** for more effective cooling.
- **POTENT RUST INHIBITOR** to protect product and tools against rust and corrosion.
- **EXCELLENT EMULSION STABILITY**, even in hardest water, for long life.

- **POWERFUL ANTI-FOAM AND ANTI-WELD PROPERTIES.**
- **EFFECTIVE GERMICIDE** to help eliminate rancidity and odor.

You can improve production and cut machining costs, with New Gulfcut Heavy Duty Soluble Oil. For more information, call a Gulf Sales Engineer, at your nearest Gulf office, or send for illustrated bulletin.

GULF OIL CORPORATION
Dept. DM, Gulf Building
Pittsburgh 30, Pa.





HERRINGBONE

WIRE ROPE

New
Longer-Wearing
Pattern in
Wire Rope
Styles!

After three years of extensive field trials this, the newest of Roebling's wire ropes, is now ready to go to work for you on a service basis that will exceed that of *the wire rope you are now using*.

Roebling Herringbone* combines the best features of both regular and Lang lay rope constructions; being made up of two pairs of Lang lay strands and two strands of regular lay. The regular lay strands separate the two pairs of Lang lay strands. Thus, in one rope you have the superior flexibility and abrasion resistance of Lang lay and the greater structural stability of regular lay.

For the past three years, under all kinds of conditions, Herringbone has been used for general hoisting, holding and closing lines, shovel ropes, wagon scraper ropes and dragline ropes. The results have been wonderful . . . excellent flexibility, exceptional resistance to shock and abrasion, smooth, easy operation around drums and over sheaves, smooth spooling properties and structural stability unequalled by other rope for the same job.

There has never been a better time—or a wider need—for a wire rope that returns so much service for its cost. And, in addition to being a top performer on the job, Herringbone eliminates the necessity of stocking Lang lay for one purpose and regular lay for another.

You are invited to get in touch with your Roebling distributor or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, for further and fuller details on the *investment* qualities of this new and highly serviceable rope.

*Reg. appl. for

ROEBLING

Branch Offices in Principal Cities • Subsidiary of The Colorado Fuel and Iron Corporation



NEW EQUIPMENT

for such cost-cutting. On a typical job, Wellman Engineering Co., Cleveland, Ohio, uses the new mechanized "squirt" welder to weld an equalizer for a large railroad revolving car dumper. Welding on this part includes $\frac{3}{8}$ -in. flat fillets joining 1-in. thick washers, or bosses, to the $1\frac{1}{2}$ -in. thick steel plate. These beads run all the way around the washers. Penetration



given by the submerged arc process eliminates beveling on the washers and reduces weld size. This substantially reduces the amount of weld metal required on the job. Welding speed, the firm reports, is about twice that possible with manual welding. The operator sets the unit to 550 amp and 37 arc volts. He sets speed of the travel motor on the gun to 17 ipm. The unit welds half way around each washer without stopping. The operator then taps off the slag at the start of the bead and finishes the weld. (Lincoln Electric Co.)

For more data circle No. 54 on postcard, p. 101

SR the dc rectifier type welder with new completely sealed semimetallic rectifier, new transformer and new weld stabilized circuit. Result is easiest arc starting, ever, maximum arc stability, spatter, denser welds, current that handles all electrode in all positions! Four models, 200 to 400 amps.

SRM the same revolutionary improvements that set the Gold Star SR above and beyond the performance standards ever before achieved by a dc rectifier type welder. Designed primarily for compactness, the SRM is only 30% high — is ideally suited for stacking or paralleling in minimum space. Three models, 200 to 400 amps.

300 combination ac/dc welder design comes of age with this new Miller model. Features: new magnetic amplifier circuit; improved wave form; new arc starting control; three electrically controlled current ranges for finest adjustment; instant changeover from ac to dc; built-in high frequency. An entirely fresh concept for inert gas and metallic welding. Four basic models with kits available to convert to seven different types of welders.

300-M an ac welder for inert gas and metallic arc processes. Combines unequalled welding characteristics with Miller's unique electric control circuit which permits precise slow or fast start. Features: built-in high frequency, primary contactor and $\frac{1}{2}$ KVA control transformer. Offered in three basic models of from 200 to 400 amperes with optional water and gas controls available.

Complete particulars on any of the above welders will be sent promptly.

ELECTRIC MANUFACTURING COMPANY, INC. Appleton, Wisconsin

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal, P. Q.

Stud Driver

Using a new powder-actuated velocity power tool, one contractor's workmen achieve a 50 pct time-saving in driving studs in steel and concrete. Immediate interchangeability of barrels permits driving $\frac{1}{4}$ or $\frac{3}{8}$ -in. size studs. It works like this: The operator inserts a cartridge-stud into the

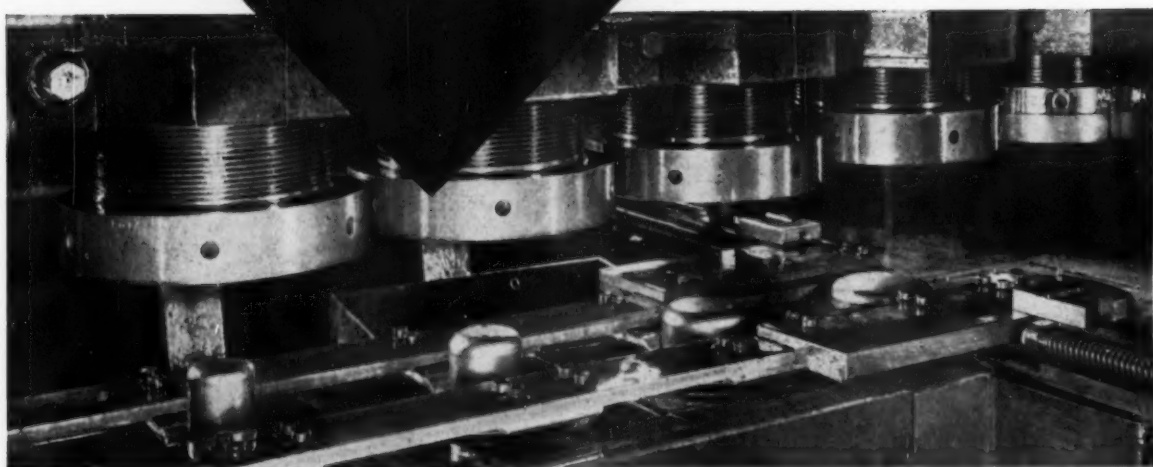


breech. Taking the knurled portion of the driver body, he closes the breech. He positions for firing by turning the barrel one-half turn. On positioning, with a $3\frac{1}{2}$ -in. protective shield against the work surface, he pushes forward until the barrel moves all the way into the tool. A squeeze of the trigger fires the cartridge, driving the stud in place. (Velocity Power Tool Co.)

For more data circle No. 55 on postcard, p. 101

MEL-TROL

at work



To deliver uniform performance between grinds, a drawing or blanking die has to be hard and tough through its whole thickness.

And no matter how well it is designed and heat treated, it can only be as uniform through the center as the bar you make it from . . . and the bar can only be as uniform as the ingot from which it is rolled.

That's why, when you make a die from Carpenter MEL-TROL air hardening die steels—such as No. 484 and No. 610—you know you're going to get predictable performance. The high quality of MEL-TROL die steels is guarded by a system of the most advanced and accurate quality controls ever used in steel making.

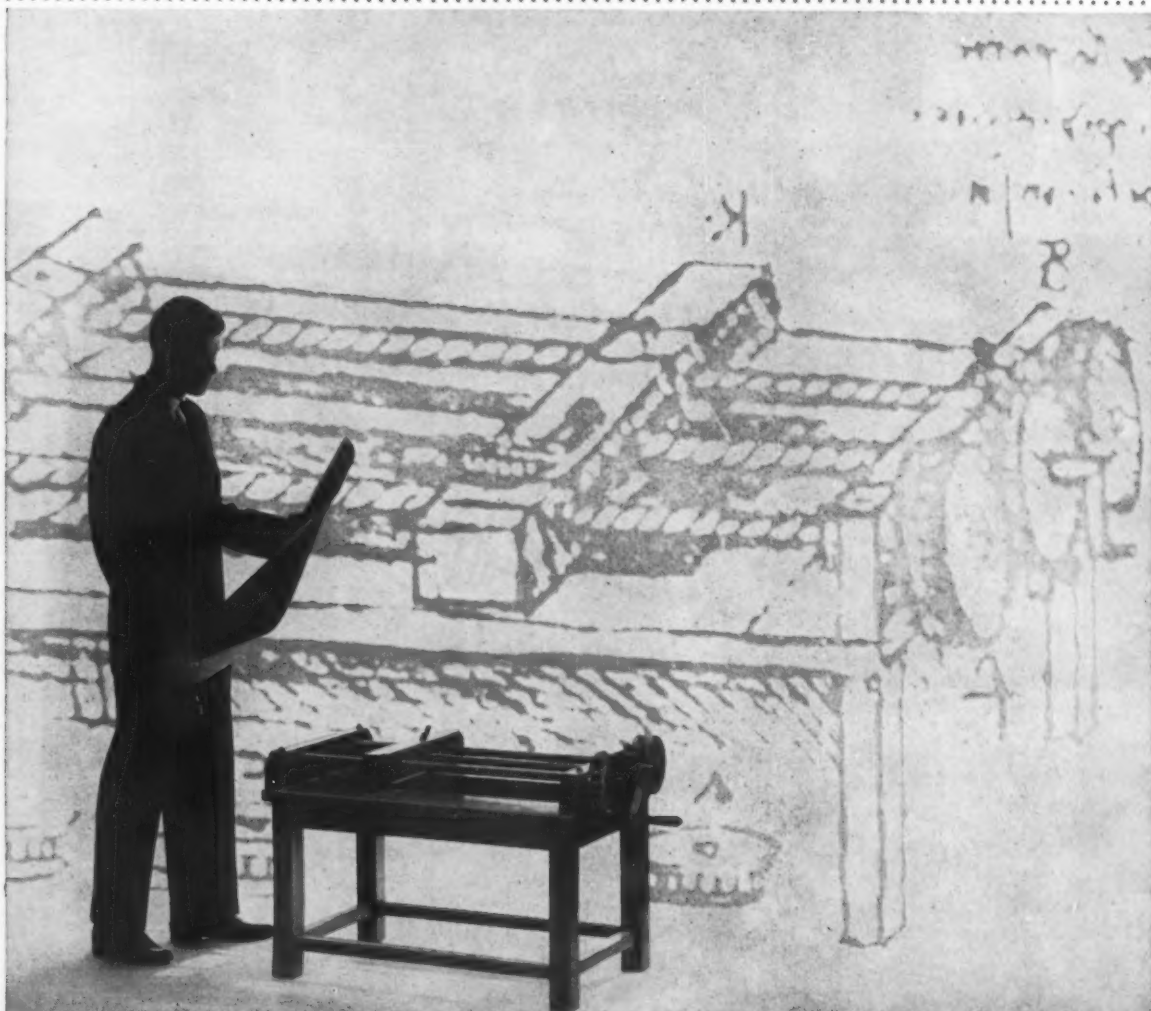
And an exclusive Carpenter-patented mold produces ingots with greater uniformity through the center than any others made on a production basis today.

Why don't you try Carpenter MEL-TROL quality tool and die steels? Call your Carpenter representative and place your order today.

Carpenter STEEL

*The Carpenter Steel Company, Main Office and Mills, Reading, Pa.
Alloy Tube Division, Union, N. J.
Carpenter Steel of New England, Inc., Bridgeport, Conn.
Webb Wire Division, New Brunswick, N. J.*

creative designing calls for an open mind



Leonardo Da Vinci's design for a screw cutting machine

Model courtesy of IBM

EVEN THIS DA VINCI DESIGN COULD HAVE BEEN BETTER WITH HELP FROM AN SKF ENGINEER.

The kind of bearings your SKF engineer recommends depends solely on your requirements, not on what he has to offer. That's because the SKF line includes all four basic types of ball and roller bearings in many thousands of sizes. This gives him the kind of flexibility he needs to keep an open mind on any bearing problem. Give your problem to SKF and see.

7832



Spherical, Cylindrical, Ball, and *Tyson* Tapered Roller Bearings

EVERY TYPE—EVERY USE

SKF

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

*REG. U.S. PAT. OFF.

The Iron Age Summary

Why Steel Prices Had to Rise

Higher wage costs and a slow market made steel price boosts inevitable.

The mills were up against it financially, and something had to give.

■ Although delayed, the steel price hike was inevitable. Steel firms were up against it financially because of higher wage costs and a slow market.

Were it not for the hesitancy of U. S. Steel Corp., prices would have gone up on July 1, when steel employment costs rose about 21¢ an hour under contracts with the United Steelworkers. This was in addition to a 5¢ cost-of-living boost last Jan. 1.

Why \$4.50?—The boost was held to \$4.50 per ton for several reasons: (1) The mills were aware that their metalworking customers are in a tough competitive position and would not be able to pass along all of the increase, and (2) they

were sensitive to public and governmental resentment against anything inflationary.

The relatively modest increase was the only way they could get off the hook and at the same time shore up their weakened financial position. At least five steel firms operated in the red during the first six months of the year—even before the full impact of higher steel wages hit them on July 1.

"Too Little, Too Late"—As it is, the price hike was "too little and too late" in the thinking of most steel firms. It came 30 to 35 days after the rise in employment costs and was less than half what the majority of companies claim they need to maintain an adequate profit position. As a result, many firms face tough financial sledding in the months ahead—even with the price boost.

Why did prices rise in a competitive steel market? Steel firms take the position that when cost increases are more than can be offset by operating efficiencies, prices must

go up. They also know from past experience that inadequate prices, or price cuts, do not sell any more steel. The only thing that could change this would be increased competition pricewise from other materials, notably aluminum.

Iron Age Composite Up—Increases to Aug. 5 boosted The Iron Age Finished Steel Price Composite from 5.967¢ per lb to 6.138¢ per lb this week. This represents an advance of \$3.42 per ton.

Meanwhile, steel users are coming into the market with more frequency. The tempo of steel orders is quickening. Demand for oil country casing and drill pipe is improving. Auto orders are bigger, but leave something to be desired. Demand from the auto centers is expected to pick up sharply later in August.

Tinplate Prices Hold—Tinplate prices will not move for the present because steel firms must give 35 days' notice to their customers. But the chances are good that tinplate will join the parade.

Steel Output, Operating Rates

	This Week	Last Week	Month Ago	Year Ago
Production				
(Net tons, 000 omitted)	1,566	1,566	1,485	2,074
Ingot Index				
(1497-1949=100)	97.4	97.4	92.4	129.1
Operating Rates				
Chicago	68.0	66.0*	63.0	83.0
Pittsburgh	52.0	48.5*	46.0	81.0
Philadelphia	66.0	66.0	60.0	93.0
Valley	49.5	46.5*	46.0	72.0
West	70.0	67.0*	62.0	102.0
Cleveland	54.0	53.0*	46.0	90.0
Buffalo	51.0	39.0	39.0	95.0
Detroit	65.0	64.5*	57.0	50.0
South	54.5	52.0	53.5	85.0
South Ohio River	41.0	42.0*	38.0	83.0
Upper Ohio River	75.0	77.0*	77.0	94.0
St. Louis	83.0	89.0*	87.0	84.5
Northeast	36.0	36.0	35.5	37.0
Aggregate	58.0	58.0	55.0	81.0

*Revised

Prices At a Glance

	This Week	Week Ago	Month Ago	Year Ago
(cents per lb unless otherwise noted)				
Composite price				
Finister Steel, base	6.138	5.967	5.967	5.967
Pig Iron (Gross ton)	\$66.49	\$66.49	\$66.49	\$66.40
Scrap, No. 1 hvy				
(Gross Ton)	\$42.17	\$40.83	\$36.50	\$53.83
No. 2 bundles	\$29.83	\$29.50	\$26.83	\$43.67
Nonferrous				
Aluminum ingot	26.80	26.10	26.10	28.10
Copper, electrolytic	26.50	26.50	25-26.50	29.25
Lead, St. Louis	10.80	10.80	10.80	13.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	95.875	95.75*	94.00	95.375
Zinc, E. St. Louis	10.00	10.00	10.00	10.00

Toolmakers Battle Rising Costs

Price increases by tool and die makers are likely, but not certain.

Tool and die shops are trying to keep costs down as they compete for sales.

■ As in other industries, higher prices for tools and dies would appear almost inevitable this year. But there are several factors which keep a price hike from being dead-certain and make it only likely.

The abundance of open capacity throughout the industry will exert economic pressure on shops when they are bidding for contracts.

Slow Rise in Orders—George S. Eaton, executive secretary for the National Tool & Die Manufacturers Assn., says members haven't reported any sharp upturns in business. However, there has been a

rise in orders since the low point reached last November. December through March showed an improvement of 25 pct, Mr. Eaton says, and the slow upturn has continued since. May shipments were up 10 pct over April; orders, however, rose only one pct. Backlogs were off 16 pct in May and equalled only 50 pct of a year ago, National's latest survey shows.

Who's Buying—There have been some bright spots showing up this year. One of those is the farm equipment industry. Virtually absent from the tool and die market place in recent years, farm implement manufacturers have done much to bolster sales.

George Rockwood, executive secretary for the Tool & Die Institute, Chicago, says orders from appliance, electrical, and electronics makers, and miscellaneous industries have

helped produce an increase in the market.

Shops Are Slow—While Chicago shops expect to be out of the woods by the end of the year, the majority of 44 shops surveyed are working only a 40 hour week. And only six said they needed more employees.

In Detroit, which has 28 pct of the nation's tool and die capacity against 7 pct for Chicago, business seems to be slowing down. Chester A. Cahn, managing director of the Automotive Tool & Die Association there, says only a few shops are working overtime in order to meet deadlines for the auto industry's new models.

So far, only a small amount of work for 1960 model cars has been released to tool and die makers—and there's no rush as labor talks drag along in the auto industry.

Negotiations are also in progress between automotive tool and die members and unions representing the members. But these too are loafing along as the union waits to see what will develop in the auto industry talks.

Detroit Watches Costs—Skilled worker's in Detroit's independent shops are among the highest, if not the highest, paid in the country. Detroit shops know this only too well, especially when it comes time to bid on work. Concerned over the growing tendency of automakers to do more work in their own captive shops, the aim of present negotiations is to let the rest of the industry catch up with Detroit on costs.

Economic demands which haven't even been discussed yet will become a key issue when they do come up. Faced with heavy union demands, Mr. Cahn is emphatic when he says "we will attempt to hold costs at present levels."



DUPLICATING: Forging die is duplicated on tracer controlled milling machine in plant of Consolidated Industries, West Cheshire, Conn.

"We strap 10,000 more cartons a week with the **USS** Gerrard Automatic Strapping Machine,"

says Donald Janisse, Warehouse Foreman, Oostburg Canning Company, Oostburg, Wisconsin



"Since we installed two USS Gerrard Model 12 Automatic Strapping Machines, using USS Gerrard Round Steel Strapping, our packaging production has increased by over 10,000 cartons a week. One man and one semi-automatic machine have been

eliminated, we get more uniformity of strapping tension and more secure packages, and virtually all accidents in our strapping operations have been stopped.

"All our packaging of non-fat dry milk is the result of government contracts," continues Mr. Janisse. "If we fail to ship a certain number of pounds per week, we are subject to a fine, which obviously could be costly. A government inspector, who is in the plant at all times, continually checks the uniformity of our packaging materials. Under our old manual strapping system, six out of every hundred strapped cartons had to be pulled out of

the assembly line for retying due chiefly to improperly placed straps. This caused a bottleneck in our operations. Now, with the USS Gerrard Model 12 and USS Gerrard Round Steel Strapping, round straps are applied uniformly, production has speeded up and there is less chance of our having to pay a fine."

The low-cost, lightweight Gerrard Model 12 is automatic—makes up to 24 ties a minute. Using economical USS Gerrard High-Tensile Round Steel Strapping, in any size from 14 to 18½ gauge, you can tie packages of varying shapes and weights without readjusting the machine. Tension can be pre-set and maintained on all packages, and a compression device holds them in position during the tying operation.

For more details, contact your USS Gerrard sales representative. And be sure to mail the coupon for the folder, and for the Gerrard Blue Book of Packaging which gives information on all USS Gerrard products. *USS and Gerrard are registered trademarks*



**Gerrard Steel Strapping Dept.,
United States Steel Supply
Division of
United States Steel**



**Gerrard Steel Strapping Division
United States Steel Corporation
4711 S. Richmond Street, Chicago, Illinois**

Please send me folder on the Automatic Strapping Machine and the 36-page GERRARD Blue Book of Packaging. No obligation.

Name

Company

Address

City State

Have Salesman call ☐

Steel Prices Rise \$4.50 Per Ton

■ It was all over but the shouting this week. The steel price advance of \$4.50 per ton had made the rounds to virtually all mills and encompassed virtually all products.

Still hanging fire as the week began were stainless steel and other so-called specialty steel price changes. Tinplate prices did not move because of the 35-day notification clause in contracts between producers and their can company customers.

As a result of price changes up to and including Aug. 5, The IRON AGE Finished Steel Composite Price advanced from 5.967¢ per lb to 6.138¢ per lb, an increase of \$3.42 per ton. Boosts subsequent to Aug. 5 will move the Composite Price up still further. (Pages 126 through 129 reflect changes effective on or before Aug. 5.)

Bethlehem Steel Corp. took the lead in raising prices of plates, shapes, and piling.

Effective Aug. 6, here are Bethlehem's new prices: Plates, \$5.30 per cwt, up \$4 per ton; structural shapes 5.55, up \$4.50; piling 6.50, up \$5.50; high strength low alloy plates 7.95, up \$6.50, and high strength low alloy structurals 8.10, up \$6.

Other producers are expected to follow suit.

Here are new prices announced by U. S. Steel Corp.:

	New Price	Old Price	Increase
CARBON STEEL:			
Ingot, forging	77.00	73.50	3.50
blooms, billets, slabs, forging	99.50	96.00	3.50
Blooms, billets, slabs, rerolling	80.00	77.50	2.50
Skelp	101.00	97.50	3.50
Tube rounds	122.50	117.50	5.00

	New Price	Old Price	Increase
Standard bars and small shapes			
Fairless Works	113.50	108.50	5.00
Special quality bars	116.50	111.50	5.00
Fairless Works	120.50	115.50	5.00
Cold-finished bars	123.50	118.50	5.00
Concrete rein bars	153.00	146.00	7.00
Fairless Works	113.50	108.50	5.00
Hot-rolled strip	116.50	111.50	5.00
Hot-rolled sheets (18 ga and heavier)	102.00	98.50	3.50
Fairless Works	103.00	99.50	3.50
Cold-rolled sheets	125.50	121.00	4.50
Fairless Works	126.50	122.00	4.50
Galvanized sheets, regular	137.50	132.00	5.50
Vitrename sheets	135.50	132.50	3.00

HIGH STRENGTH PRODUCTS:

USS COR-TEN			
Hot-rolled sheets	150.50	145.50	5.00
Fairless Works	151.50	146.50	5.00
Galvanized sheets	202.50	194.50	8.00
Cold-rolled sheets	185.50	179.50	6.00
Fairless Works	186.50	180.50	6.00
Hot-rolled strip	151.50	146.50	5.00

USS MAN-TEN R			
Hot-rolled sheets	126.50	121.50	5.00
Fairless Works	127.50	122.50	5.00
Hot-rolled strip	126.50	121.50	5.00

USS ABRASION RESISTING			
Hot-rolled sheet	137.50	132.50	5.00
Hot-rolled strip	137.50	132.50	5.00

USS MAN-TEN S			
Bars and small shapes			
Hot-rolled sheets	135.50	130.50	5.00
Fairless Works	136.50	131.50	5.00
Hot-rolled strip	135.50	130.50	5.00

WIRE PRODUCTS:

Wire rods carbon			
Donora, Cleveland, Joliet, and Fairfield	128.00	123.00	5.00
Worcester	134.00	129.00	5.00

PURCHASING AGENT'S CHECKLIST

Reaction to the steel price increases. **P. 44**

How to cut production costs—an IRON AGE Special Report to Management. **P. 75**

Primary aluminum price goes up .7¢. **P. 122**

	New Price	Old Price	Increase
Cold-rolled low carbon strip			
Cleveland	148.50	143.00	5.50
Worcester	159.50	154.00	5.50
Wire—Mfrs. coarse bright, low carbon			
Cleveland, Donora, Joliet, Duluth, Waukegan and Fairfield	160.00	153.00	7.00
Worcester	166.00	159.00	7.00
Premier spring wire—high carbon			
Cleveland, Donora, Duluth and Waukegan	195.00	186.00	9.00
New Haven, Trenton and Worcester	201.00	192.00	9.00
MB spring wire—high carbon			
Cleveland, Donora, Duluth and Waukegan	195.00	186.00	9.00
New Haven, Trenton and Worcester	201.00	192.00	9.00

ALLOY STEEL:

Ingot (net ton)	82.00	77.00	5.00
Billets, blooms, slabs	119.00	114.00	5.00
Hot-rolled bars	134.50	129.50	5.00
Fairless Works	137.50	132.50	5.00
Bar shapes	136.00	131.00	5.00

OTHER ITEMS:

Electrical sheets			
Electrical grade fully processed c-r coils, cut lengths	248.00	241.00	7.00
Long ternes	144.50	140.00	4.50

PIPE AND TUBULAR PRODUCTS:

	Increase
Boltweld standard and line pipe, black and galvanized	
1/4"–4" OD	\$ 6.00
Seamless standard and line pipe, black and galvanized	
2 1/2"–24" OD	\$ 6.00
Seamless and electric weld line pipe	
26"–36" OD	\$ 5.00
Electric weld line pipe	
24" OD	\$ 6.00
Oil country casing	
Grade J55, Short T and C (all sizes)	\$ 7.00
Oil country tubing	
Grade J55, Upset T and C (all sizes)	\$ 8.00
Drill pipe	
Grade D (Internal upset) all sizes	\$10.00

Increases in these additional products were announced effective August 4 by Republic Steel Corp.:

	New Price	Old Price	Increase
Bars, alloy cold drawn			
Beaver Falls, Gary and Massillon	180.50	175.50	5.00
Hartford, Conn.	186.50	181.50	5.00
Strip			
High strength, cold-rolled low alloy			
Miles and Warren, O	216.00	209.00	7.00
Track Spikes			
South Chicago and Youngstown	202.00	195.00	7.00

COMPARISON OF PRICES

(Effective Aug. 5, 1958)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	Aug. 5 1958	July 29 1958	July 8 1958	Aug. 6 1957
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	4.925¢	4.925¢	4.925¢
Cold-rolled sheets	6.275	6.05	6.05	6.05
Galvanized sheets (10 ga.)	6.875	6.60	6.60	6.60
Hot-rolled strip	5.10	4.925	4.925	4.925
Cold-rolled strip	7.425	7.17	7.17	7.17
Plate	5.12	5.12	5.12	5.12
Plates, wrought iron	13.15	13.15	13.15	13.15
Stain's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$10.30	\$10.30	\$10.30	\$10.30
Tin plates, electro (0.50 lb.)	9.00	9.00	9.00	9.00
Special coated mfg. ternes	9.55	9.55	9.55	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.425¢	5.425¢	5.425¢
Cold finished bar	7.65	7.30	7.30	7.30
Alloy bars	6.725	6.475	6.475	6.475
Structural shapes	5.275	5.275	5.275	5.275
Stainless bars (No.302)	45.00	45.00	45.00	45.00
Wrought iron bars	14.45	14.45	14.45	14.45
Wire: (per pound)				
Bright wire	8.00¢	7.65¢	7.65¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	\$5.525	\$5.525	\$5.525	\$5.525
Light rails	6.50	6.50	6.50	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	\$80.00	\$77.50	\$77.50	\$77.50
Slabs, rerolling	80.00	77.50	77.50	77.50
Forging billets	99.50	96.00	96.00	96.00
Alloy blooms, billets, slabs	119.90	114.00	114.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.15¢	6.15¢	6.15¢
Skelp	5.05	4.875	4.875	4.875
Finished Steel Composite: (per pound)				
Base price	6.138¢	5.967¢	5.967¢	5.967¢
Finished Steel Composite				
Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.				

	Aug. 5 1958	July 29 1958	July 8 1958	Aug. 6 1957
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$70.97	\$70.97	\$70.97	\$70.98
Foundry, Valley	66.50	66.50	66.50	66.50
Foundry, Southern Cin'ti	73.87	73.87	73.87	70.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.47	70.47	70.47	69.88
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	67.00
Ferromanganese 74-76 pct Mn, cents per lb½	12.25	12.25	12.25	12.75
Pig Iron Composite: (per gross ton)				
Pig iron	\$66.49	\$66.49	\$66.49	\$66.40
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	\$44.50	\$44.50	\$38.50	\$55.50
No. 1 steel, Phila. area	37.50	36.50	33.50	51.30
No. 1 steel, Chicago	44.50	41.50	37.50	54.50
No. 1 bundles, Detroit	37.50	32.50	31.50	50.50
Low phos., Youngstown	46.50	44.50	39.50	58.50
No. 1 mach'y cast, Pittsburgh	51.50	51.50	48.50	58.50
No. 1 mach'y cast, Phila.	49.50	49.50	47.50	56.50
No. 1 mach'y cast, Chicago	52.50	51.50	46.50	53.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	\$42.17	\$40.83	\$36.50	\$53.83
No. 2 bundles	29.83	29.50	26.83	43.67
Coke Connellsville: (per net ton at oven)				
Furnace coke, prompt	\$15.38	\$15.38	\$15.38	\$15.38
Foundry coke, prompt	\$17.50-\$19	\$17.50-\$19	\$17.50-\$19	\$17.50-\$19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	26.50	26.50	25-26.50	29.25
Copper, Lake, Conn.	26.50	25.00	25.00	29.25
Tin, Straits, N. Y.	95.875¢	95.75*	94.00	96.375
Zinc, East St. Louis	10.00	10.00	10.00	10.00
Lead, St. Louis	10.80	10.80	10.80	13.80
Aluminum, virgin ingot	26.80	26.10	26.10	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	33.00

† Tentative. ‡ Average. * Revised.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap Composite

Averages of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Price Spiral Begins Slowing Down

Does it mean a leveling off is near or is it just a breathing spell?

The question is being pondered by many dealers. There are omens that September may bring a new surge in prices.

■ The bull is still in the market but he's lost some weight. With the exception of Chicago and Detroit, price increases have slowed to a more temperate rate or have halted, temporarily at least.

How much higher prices can go before mills start backing away is a question in the mind of many a dealer who has been holding out for the best time to sell.

There is strong feeling in the trade that September will bring even higher prices. A leveling off seems probable in the latter part of August but there is expectation—and with good reason—that the scrap market will break upward again next month.

Supporting factors are the seasonal upturn in most metalworking industries, including automotive and appliances, and their demand on steel mill operations.

In Detroit, competitive bidding for scarce industrial lists forced a sympathetic rise of \$5 per ton in dealer openhearth grades.

In Chicago, where primary steel-making grades were up \$3, material began moving freely, indicating that the market may soon begin leveling off there. The latest increases sent The IRON AGE No. 1 heavy melting Composite Price up \$1.33 to \$42.17.

Pittsburgh—Prices of openhearth grades paused uncertainly after last week's sharp jump. Industrial, railroad, and low phos grades continue to climb. But there are signs that they may be outrunning the market. The new levels have produced sellers. But they also have drawn warnings that mills will resist further price jumps.

Chicago—Price of No. 1 heavy melting is up \$3 to \$44-\$45. Scrap began flowing in heavier quantities as mills affirmed higher prices on a flurry of sales. The freer flow strengthened hopes among some brokers and mills that the market would begin leveling early this month. Strong new list prices for factory bundles, railroad, and stainless could again freeze movement.

Philadelphia — A mill purchase this week brought a \$1 increase in No. 1 and No. 2 heavy melting, machine shop turnings, and shoveling turnings. Heavy turnings sold for \$33, an increase of \$2. Orders for cupola cast at \$40 by two large foundries overshadowed a \$41 price paid by a smaller foundry. Price of heavy breakable cast was misquoted last week at \$43-\$44. Correct price is \$41-\$42.

New York — New buying has boosted steelmaking and cast grades as much as \$2 per ton. No. 1 heavy melting is now at a top of \$39, up \$2. Strength in cast comes principally from pipe foundry orders. Stainless scrap price changes last week were incorrectly assigned to 430 grades instead of 18-8.

Detroit — Sharp bidding for

limited tonnages of industrial scrap raised No. 1 bundles in the range of \$44.50 to \$46.50 on industrial lists. It's about \$9 higher than the previous month's list. However, mill resistance to the higher prices is keeping dealer prices a question mark.

Cleveland—This market is taking a short breather. Auto lists went for about \$45 on cars with some being laid down. Brokers are finding it hard to cover older orders and some fancy prices are being quoted to dealers for spot tonnages. Prime grades are in top demand, including dealer tonnage. Another price surge may be expected soon.

St. Louis—Scrap prices continue to advance in a strong market. Higher prices are drawing more scrap into dealer yards. Cast grades are in better demand as are steel-making items.

Birmingham—A major consumer increased its price \$3 for electric furnace grades this week, and some brokers raised their quotations for openhearth grades. The cast iron market is strong, but material is limited.

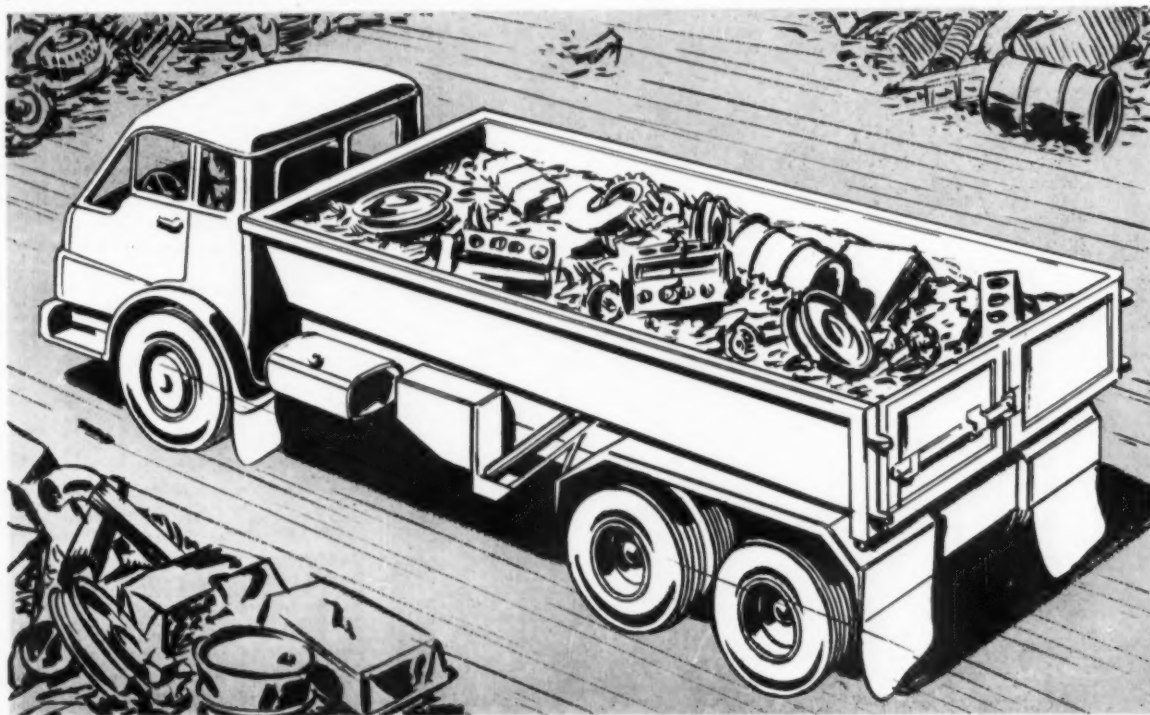
Cincinnati—Area mills are in the market and flow from dealer yards is healthy at new prices. Market is up \$3.50 on steelmaking grades and expected to hold at these levels.

Buffalo—Sales of No. 2 heavy melting and No. 2 bundles were made at quoted prices last week. Shoveling turnings were up \$5 on basis of small sales. Other grades rose in sympathy to strength in other markets, including price of No. 1 heavy melting, up \$3.

Boston—Optimism continues to hold sway in this market. Most grades are up \$1. With activity increasing, many dealers are holding out for higher prices.

West Coast — August mill commitments remain at current prices. Dealers describe the current market as "terrible." They draw new hope from the spiralling Eastern markets.

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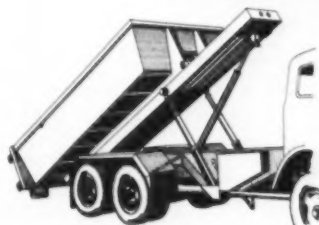
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SCRAP PRICES (Effective Aug. 5, 1958)

Pittsburgh

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	35.00 to 36.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	51.00 to 52.00
No. 2 bundles	33.00 to 34.00
No. 1 busheling	43.00 to 44.00
Machine shop turn.	20.00 to 21.00
Mixed bor. and ma. turn.	20.00 to 21.00
Shoveling turnings	24.00 to 25.00
Cast iron borings	24.00 to 25.00
Low phos. punch's plate	50.00 to 51.00
Heavy turnings	36.00 to 37.00
No. 1 RR hvy. melting	49.00 to 50.00
Scrap rails, random lgth.	54.00 to 55.00
Rails 2 ft and under	57.00 to 58.00
RR steel wheels	53.00 to 54.00
RR spring steel	53.00 to 54.00
RR couplers and knuckles	53.00 to 54.00
No. 1 machinery cast.	51.00 to 52.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	41.00 to 42.00
Stainless	
18-8 bundles and solids	185.00 to 190.00
18-8 turnings	105.00
430 bundles and solids	105.00 to 110.00
410 turnings	45.00

Chicago

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	39.00 to 40.00
No. 1 dealer bundles	45.00 to 46.00
No. 1 factory bundles	51.00 to 52.00
No. 2 bundles	32.00 to 33.00
No. 1 busheling	41.00 to 42.00
Machine shop turn.	24.00 to 25.00
Mixed bor. and turn.	25.00 to 26.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	25.00 to 26.00
Low phos. forge crops	54.00 to 55.00
Low phos. punch's plate	51.00 to 52.00
Low phos. 3 ft and under	48.00 to 49.00
No. 1 RR hvy. melting	49.00 to 50.00
Scrap rails, random lgth.	54.00 to 55.00
Revolving rails	64.00 to 65.00
Rails 2 ft and under	59.00 to 60.00
Locomotive tires cut	54.00 to 55.00
Cut bolsters & side frames	51.00 to 52.00
Angles and splice bars	56.00 to 57.00
RR steel car axles	68.00 to 69.00
RR couplers and knuckles	52.00 to 53.00
No. 1 machinery cast.	52.00 to 53.00
Cupola cast.	46.00 to 47.00
Heavy breakable cast.	41.00 to 42.00
Cast iron brake shoes	42.00 to 43.00
Cast iron wheels	40.00 to 41.00
Malleable	56.00 to 57.00
Stove plate	44.00 to 45.00
Steel car wheels	51.00 to 52.00
Stainless	
18-8 bundles and solids	195.00 to 200.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	105.00 to 110.00
430 turnings	65.00 to 70.00

Philadelphia Area

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	33.00 to 34.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	18.00 to 19.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	22.00 to 23.00
Clean cast. chem. borings	24.00 to 25.00
Low phos. 5 ft and under	40.00 to 41.00
Low phos. 2 ft and under	42.00 to 43.00
Low phos. punch's	42.00 to 43.00
Elec. furnace bundles	38.00 to 39.00
Heavy turnings	32.00 to 33.00
RR steel wheels	44.50 to 45.50
RR spring steel	44.50 to 45.50
Rails 18 in. and under	57.00 to 58.00
Cupola cast.	39.00 to 40.00
Heavy breakable cast.	41.00 to 42.00
Cast iron car wheels	44.00 to 45.00
Malleable	56.00 to 57.00
Unstripped motor blocks.	30.00 to 31.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$38.50 to \$39.50
No. 2 hvy. melting	33.50 to 34.50
No. 1 dealer bundles	38.50 to 39.50
No. 2 bundles	26.00 to 27.00
Machine shop turn.	19.00 to 20.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	42.00 to 43.00
Rails, random length	44.00 to 45.00
Rails, 18 in. and under	54.00 to 55.00
No. 1 cupola cast.	43.00 to 44.00
Hvy. breakable cast.	33.00 to 34.00
Drop broken cast.	45.00 to 46.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Cleveland

No. 1 hvy. melting	\$40.50 to \$41.50
No. 2 hvy. melting	32.50 to 33.50
No. 1 dealer bundles	40.50 to 41.50
No. 1 factory bundles	45.00 to 46.00
No. 2 bundles	27.50 to 28.50
No. 1 busheling	40.50 to 41.50
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Cut structural & plates, 2 ft & under	48.00 to 49.00
Drop forge flashings	40.50 to 41.50
Low phos. punch's plate	41.50 to 42.50
Foundry steel, 2 ft & under	46.00 to 47.00
No. 1 RR hvy. melting	55.00 to 56.00
Rails 2 ft and under	56.00 to 57.00
Rails 18 in. and under	56.00 to 57.00
Railroad grate bars	18.00 to 19.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	48.00 to 49.00
No. 1 machinery cast.	48.00 to 49.00
Stove plate	44.00 to 45.00
Malleable	61.00 to 62.00
Stainless	
18-8 bundles	180.00 to 190.00
18-8 turnings	100.00 to 105.00
430 bundles	95.00 to 100.00
430 turnings	40.00 to 45.00

Buffalo

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 busheling	36.00 to 37.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	29.00 to 30.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	18.00 to 19.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	16.00 to 17.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	45.00 to 46.00
Scrap rails, random lgth.	47.00 to 48.00
Rails 2 ft and under	59.00 to 60.00
RR steel wheels	44.00 to 45.00
RR spring steel	44.00 to 45.00
RR couplers and knuckles	44.00 to 45.00
No. 1 machinery cast.	43.00 to 44.00
No. 1 cupola cast.	39.00 to 40.00

St. Louis

No. 1 hvy. melting	\$37.00 to \$38.00
No. 2 hvy. melting	34.00 to 35.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	28.00 to 29.00
Machine shop turn.	17.00 to 18.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
No. 1 RR hvy. melting	48.00 to 49.00
Rails, random lengths	48.00 to 49.00
Rails, 18 in. and under	50.00 to 51.00
Angles and splice bars	43.00 to 44.00
Std. steel car axles	65.00 to 66.00
RR specialties	44.00 to 45.00
Cupola cast.	43.00 to 44.00
Heavy breakable cast.	35.00 to 36.00
Cast iron brake shoes	35.00 to 36.00
Stove plate	42.00 to 43.00
Cast iron car wheels	40.00 to 41.00
Revolving rails	61.00 to 62.00
Unstripped motor blocks.	38.00 to 39.00

Birmingham

No. 1 hvy. melting	\$35.00 to \$36.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	21.00 to 22.00
Shoveling turnings	22.00 to 23.00
Cast iron borings	12.00 to 13.00
Electric furnace bundles	39.00 to 40.00
Elec. furnace, 3 ft & under	37.00 to 38.00
Bar crops and plate	44.00 to 45.00
Structural and plate, 2 ft.	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	45.00 to 46.00
Rails, 18 in. and under	49.00 to 50.00
Angles & splice bars	45.00 to 46.00
Revolving rails	59.00 to 60.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	52.00 to 53.00
Charging box cast.	22.00 to 23.00
Cast iron car wheels	38.00 to 39.00
Unstripped motor blocks.	41.00 to 42.00

Youngstown

No. 1 hvy. melting	\$44.00 to \$45.00
No. 2 hvy. melting	36.00 to 37.00
No. 1 dealer bundles	44.00 to 45.00
No. 2 bundles	30.00 to 31.00
Machine shop turn.	20.50 to 21.50
Shoveling turnings	24.50 to 25.50
Cast iron borings	24.50 to 25.50
Low phos. plate	46.00 to 47.00

New York

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	24.00 to 25.00
No. 2 dealer bundles	17.00 to 18.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	10.00 to 11.00
Clean cast. chem. borings	22.00 to 23.00
No. 1 machinery cast.	36.00 to 37.00
Mixed yard cast.	34.00 to 35.00
Charging box cast.	33.00 to 34.00
Heavy breakable cast.	33.00 to 34.00
Unstripped motor blocks.	22.00 to 23.00
Stainless	
18-8 prepared solids	165.00 to 170.00
18-8 turnings	65.00 to 70.00
430 prepared solids	55.00 to 60.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$34.00 to \$35.00
No. 2 hvy. melting	25.50 to 26.50
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	34.00 to 35.00
Drop forge flashings	33.00 to 34.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	15.00 to 16.00
Low phos. punch's plate	34.00 to 35.00
No. 1 cupola cast.	40.00 to 41.00
Heavy breakable cast.	30.00 to 31.00
Mixed cupola cast.	40.00 to 41.00
Automotive cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	180.00 to 185.00
18-8 turnings	90.00 to 95.00
430 bundles and solids	90.00 to 95.00
410 turnings	20.00 to 25.00

Boston

Brokers buying prices per gross ton on cars:	
No. 1 hvy. melting	\$24.00 to \$25.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	24.00 to 25.00
No. 2 bundles	17.00 to 18.00
No. 1 busheling	24.00 to 25.00
Machine shop turn.	6.00 to 7.00
Mixed bor. and short turn.	6.00 to 7.00
Shoveling turnings	8.00 to 9.00
Clean cast. chem. borings	16.00 to 17.00
No. 1 machinery cast.	31.00 to 32.00
Mixed cupola cast.	29.00 to 30.00
Heavy breakable cast.	28.00 to 29.00
Stove plate	28.00 to 29.00
Unstripped motor blocks.	22.00 to 23.00

San Francisco

No. 1 hvy. melting	\$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	28.00
No. 2 bundles	22.00
Machine shop turn.	15.00
Cast iron borings	15.00
No. 1 RR hvy. melting	32.00
No. 1 cupola cast.	45.00

Los Angeles

No. 1 hvy. melting	\$32.00
No. 2 hvy. melting	30.00
No. 1 dealer bundles	\$27.00 to 28.00
No. 2 bundles	17.00
Machine shop turn.	11.00
Shoveling turnings	13.00
Cast iron borings	13.00
Stove plate	28.00 to 29.00
Elec. turn 1 ft and under (foundry)	43.00
No. 1 RR hvy. melting	33.00
No. 1 cupola cast.	39.00

Seattle

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	28.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Bush., new fact. prep'd.	30.00
Bush., new fact. unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	\$45.00 to \$50.00

Hamilton, Ont.

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	26.00
No. 1 dealer bundles	30.00
No. 2 bundles	23.00
Mixed steel scrap	25.00
Busheling	20.00
Bush., new fact. prep'd.	30.00
Bush., new fact. unprep'd	24.00
Machine shop turn.	15.00
Short steel turn.	19.00
Mixed bor. and turn.	15.00
Rails, rerolling	39.00
Cast scrap	\$45.00 to \$50.00

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Will Competition Limit Aluminum Price Hike?

Alcoa leads producers, including Alcan, up 7/10¢ on primary, and proportionately on alloys and mill products.

Trade says competition may hold real prices of some mill items down for 60 days.

▪ Book prices of primary aluminum, alloys and mill products are up. But while the hike in primary may be real, the actual selling price of some mill items may not advance for at least 60 days.

An executive of an independent mill says that paying more for primary metal, while attempting to compete with imports and U. S. producers, is likely to "squeeze" his company. An extruder agrees.

Price Rise—Alcoa initiated the hike—7/10¢ per lb on primary and equivalent advances on alloy and mill products—on August 1 when their wage costs were up under contracts with the unions.

The rest of the producers followed, effective the same day, except Kaiser effective August 4, and the big question mark, Aluminium Ltd., effective August 2 only in the U. S.

Cover Old Orders—One extruder points out that under the current ground rules the domestic producers will ship at the old prices for 60 days any order officially on the books before the increase. Aluminium Ltd. will cover pre-hike orders at former levels for 90 days. He says he and others did some hedge ordering before the hike.

Further, he adds he is buying

more foreign metal at more attractive prices. Just a few days before the U. S. producers raised prices, he said he purchased 33,000 lb of high-grade French aluminum at less than he would have had to pay for the equivalent U. S. metal even then.

His opinion: Discounting on new prices will be the rule rather than the exception. But he and many independents have enough metal in the pipelines to meet the competition for at least 60 days.

Warehouses Unhappy — Warehouses handling only U. S. metal were emphatic in their protest to the higher price.

"I don't think the industry was very smart," said one.

"This isn't the right thing to do," says another. "It doesn't solve anything."

Their problem has been trying to compete with foreign mill shapes selling at bargain basement prices. And they say the problem is getting worse.

Imports Inland—Until now imported shapes have been hitting mainly the East Coast. But the head of one Eastern warehouse reports a friend with a string of warehouses in St. Louis, Kansas City, Wichita, Kan., and Tulsa, Okla., is starting to feel the pinch.

This added penetration and the high prices are making some warehousemen feel they are backed into a corner. Some say they are considering handling some foreign metal.

A diecaster, whose operation is 95 pct aluminum, says generally he is in favor of holding the price line during the current recession. But he

feels the aluminum hike may be justified on the grounds that it doesn't even recover the 2¢ cut forced by Aluminium Ltd. in March. That, he says, was not realistic.

Quiet in Washington — On the congressional front, no investigation or hearings as are planned for the steel industry, are in the works. Sidney Yates (D., Ill.), chairman of the Subcommittee of the House Small Business Committee that has been looking into competition in the aluminum industry, says only that he will keep his eye on whether the higher price actually hurts or squeezes the small aluminum businessman. If such appears to be the case, he says he will call for hearings.

Tin prices for the week: July 30—95.50; July 31—95.375; Aug. 1—95.50; Aug. 4—95.75; Aug. 5—95.875.*

* Estimate.

Monthly Average Metal Prices (Cents per lb except as noted)

Average prices of the major nonferrous metals in July based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd	
Conn. Valley	25.023
Copper, Lake	25.75
Straits Tin, New York	94.892
Zinc, E. St. Louis	10.00
Lead, St. Louis	10.80
Aluminum ingot	26.10

Note: Quotations are going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.00	26.10	8/1/58
Copper (E)	26.50	25-26.50	7/17/58
Copper (CS)	27.00	26.50	8/1/58
Copper (L)	26.50	25.00	7/17/58
Lead, St. L.	10.80	11.36	7/1/58
Lead, N. Y.	11.00	11.50	7/1/58
Magnesium ingot	36.00	34.00	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/6/56
Titanium sponge	185-205	200-250	4/1/58
Zinc, E. St. L.	10.00	10.50	7/1/57
Zinc, N. Y.	10.50	11.00	7/1/57

ALUMINUM: 99% ingot frt allwd. **COPPER:** (E) = electrolytic, (CS) = custom smelters, electrolytic, (L) = lake. **LEAD:** common grade. **MAGNESIUM:** 99.8% pig Velasco. Tex. **NICKEL:** Port Colbourne, Canada. **ZINC:** prime western. **TIN:** see above; other primary prices, pg. 124.

Take a new look at ZIRCONIUM

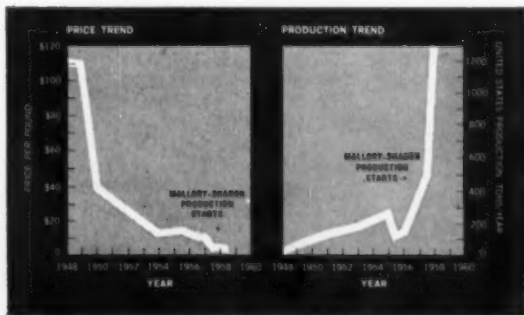
Now zirconium takes another giant step ... from an expensive rarity to a readily available special-purpose metal. Capacity is now on hand for not only A.E.C. requirements but also commercial markets. And, as in titanium, Mallory-Sharon is in the forefront of this rapid development.

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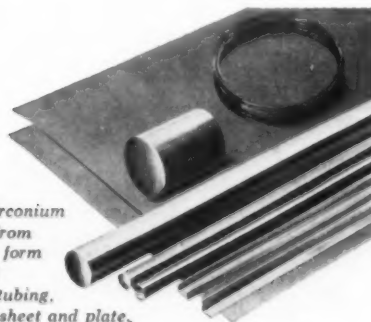
For availability — As Mallory-Sharon's large, modern, sponge plant reaches full production this year, zirconium becomes readily available for all commercial applications.



For lower prices — Greater availability will definitely be reflected in lower prices. In many cases, the improved performance of zirconium parts much more than offsets their higher material cost.



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For mill products — Zirconium is now available from Mallory-Sharon in the form of rounds, bars and billets, wire, tubing, strip, foil, sheet and plate. Quality and properties are carefully controlled at every stage of production.

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NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship. pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)
("F" temper except 6061-0)

Alloy	.032	.081	.135-.249	.250-3.
1100, 3003	44.6	42.3	41.1	41.7
5052	52.0	46.9	45.2	44.4
6061-0	49.4	45.0	43.2	43.1

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	45.0-46.8	58.4-62.1
12-14	45.7-47.2	59.3-63.8
24-28	49.0-49.5	70.1-74.8
36-38	58.0-58.6	94.2-97.8

Screw Machine Stock—2011-T-3

Size*	3/4	3/4-5/8	3/4-1	1 1/4-1 1/2
Price	61.0	60.5	59.0	56.6

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping Pt., carload frt. allowed)

Sheet and Plate

Type→	Gage→	.250 3.00	.250- 2.00	.188	.081	.053
AZ31B Stand, Grade				67.9	69.0	77.9
AZ31B Spec.				93.3	95.7	108.7
Tread Plate				70.6	71.7	
Tooling Plate		73.0				

Extruded Shapes

Factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	69.6	70.7	75.6	99.2
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting)..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velaeco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices, f.o.b. mill)

"A" Nickel Monel

	Nickel	Monel	Inconel
Sheet, CR	126	106	128
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	120	105	121
Seamless tube	157	129	200
Cast, blocks		87	

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	49.13		46.86	49.82
Brass, 70/30	43.57	44.11	43.51	46.48
Brass, Low	46.03	46.57	45.97	48.84
Brass, R L	46.89	47.43	46.83	49.70
Brass, Naval	47.83		42.14	50.99
Muntz Metal	45.95		41.76	
Comm. Br.	48.30	48.84	48.24	50.86
Mang. Br.	51.53		45.74	
Phos. Br. 5%	58.59		69.09	

Free Cutting Brass Rod 29.28

TITANIUM

(Freight included in 5000 lbs)

Sheet and strip, commercially pure, \$8.50-\$10.10; alloy, \$15.95; Plate, HR, commercially pure, \$6.00-\$6.75; alloy, \$8.75-\$9.50. Wire, rolled and/or drawn, commercially pure, \$6.50-\$7.00; alloy, \$10.00-\$11.50; Bar, HR or forged, commercially pure, \$5.25-\$5.50; alloy, \$5.25-\$6.35; billets, HR, commercially pure, \$4.10-\$4.35; alloy, \$4.10-\$4.20.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex., 29.50
Beryllium aluminum 5% Be, Dollar
per lb contained Be \$74.75
Beryllium copper, per lb conta'd Be, \$43.00
Beryllium 97% lump or beads,
f.o.b. Cleveland, Reading \$71.50
Bismuth, ton lots \$ 2.25
Cadmium, del'd \$ 1.55
Calcium, 99.9% small lots \$ 4.55
Chromium, 99.5% metallic beads \$ 1.31
Cobalt, 97-99% (per lb) \$2.00 to \$2.07
Germanium, per gm, f.o.b. Miami,
Okla., refined \$9.50 to \$0.00
Gold, U. S. Treas., per troy oz. \$35.00
Indium, 99.9%, dollars per troy oz. \$ 2.25
Iridium, dollars per troy oz. \$70 to \$80
Lithium, 98% \$11.00 to \$14.00
Magnesium, sticks, 100 to 500 lb. \$9.00
Mercury, dollars per 76-lb flask,
f.o.b. New York \$228 to \$231
Nickel oxide sinter at Buffalo, N. Y.,
or other U. S. points of entry,
contained nickel 69.60
Palladium, dollars per troy oz. \$19 to \$21
Platinum, dollars per troy oz. \$62 to \$70
Rhodium \$120.00 to \$125.00
Silver ingots (\$ per troy oz.) \$8.625
Thorium, per kg. \$43.00
Vanadium \$ 3.45
Zirconium sponge \$ 5.00

Remelted Metals

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 27.00
No. 120 26.25
No. 123 25.75
80-10-10 ingot
No. 305 31.25
No. 315 29.25
88-10-2 ingot
No. 210 38.25
No. 215 34.00
No. 245 30.75
Yellow ingot
No. 405 22.75
Manganese bronze
No. 421 24.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.50-25.00
0.60 copper max. 24.25-24.75
Piston alloys (No. 122 type) 24.25-25.00
No. 12 alum. (No. 2 grade) 21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.) 24.25-24.75
AKS-679 (1 pct zinc) 21.75-22.25

(Effective Aug. 4, 1958)

Steel deoxidizing aluminum notch bar
granulated or shot

Grade 1—95-97 1/2%	22.50-23.50
Grade 2—92-95%	21.25-21.75
Grade 3—90-92%	20.25-20.75
Grade 4—85-90%	17.25-18.00

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for
shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	22 1/2	21 1/2
Yellow brass	17	15 1/2
Red brass	19 1/2	19
Comm. bronze	20 1/2	19 1/2
Mang. bronze	15 1/2	14 1/2
Yellow brass rod ends	16 1/2	

Customs Smelters Scrap

(Cents per pound carload lots, delivered
to refinery)

No. 1 copper wire	23 1/2
No. 2 copper wire	22
Light copper	19 1/2
*Refinery brass	21 1/2
Copper bearing material	19 1/2
*Dry copper content.	

Ingot Makers Scrap

(Cents per pound carload lots, delivered
to refinery)

No. 1 copper wire	23 1/2
No. 2 copper wire	22
Light copper	19 1/2
No. 1 composition	19 1/2
No. 1 comp turnings	19 1/2
Hvy. yellow brass solids	15 1/2
Brass pipe	15 1/2
Radiators	15 1/2

Aluminum

Mixed old cast.	12	12 1/2
Mixed new clips	15	15 1/2
Mixed turnings, dry	12 1/2	13

Dealers' Scrap

(Dealers' buying price f.o.b. New York
in cents per pound)

Copper and Brass

No. 1 copper wire	20	20 1/2
No. 2 copper wire	18	18 1/2
Light copper	16	16 1/2
Auto radiators (unswaged)	11 1/2	12 1/2
No. 1 composition	15 1/2	15 1/2
No. 1 composition turnings	14 1/2	15 1/2
Cocks and faucets	13	13 1/2
Clean heavy yellow brass	11	11 1/2
Brass pipe	13	13 1/2
New soft brass clippings	13 1/2	14
No. 1 brass rod turnings	11	11 1/2

Aluminum

Alum. pistons and struts	5	5 1/2
Aluminum crankcases	9	9 1/2
1100 (28) aluminum clippings	13 1/2	13
Old sheet and utensils	9	9 1/2
Borings and turnings	6	6 1/2
Industrial castings	9	9 1/2
2024 (24S) clippings	10 1/2	11

Zinc

New zinc clippings	4	4 1/2
Old zinc	3	3 1/2
Zinc routings	1 1/2	2
Old die cast scrap	1 1/2	1 1/2

Nickel and Monel

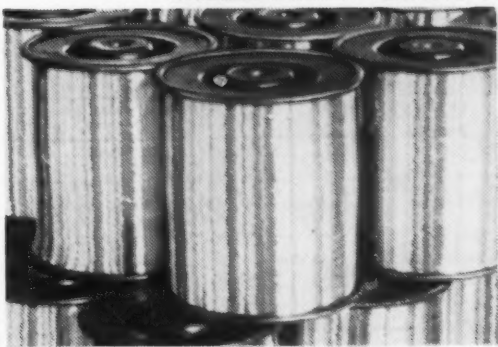
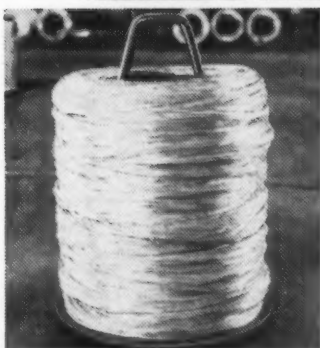
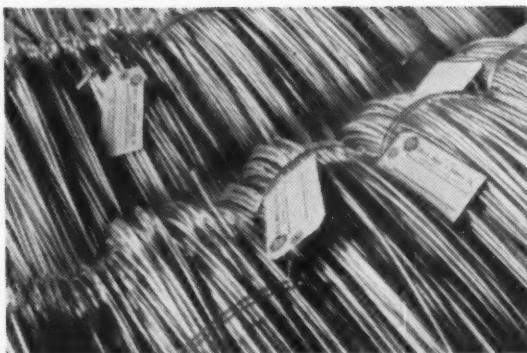
Pure nickel clippings	43-45
Clean nickel turnings	37-40
Nickel anodes	42-45
Nickel rod ends	42-45
New Monel clippings	28-29
Clean Monel turnings	20-23
Old sheet Monel	25-26
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

Soft scrap lead	6 1/2	7
Battery plates (dry)	2 1/2	3 1/2
Batteries, acid free	1 1/2	1 1/2

Miscellaneous

Block tin	75	—76
No. 1 pewter	59	—60
Auto babbitt	39	—40
Mixer common babbitt	9 1/2	—10
Solder joints	13 1/2	—13 1/2
Siphon tops		42
Small foundry type	10 1/2	—10 1/2
Monotype	10 1/2	—10 1/2
Lino. and stereotype	9 1/2	—9 1/2
Electrotype	8 1/2	—8 1/2
Hand picked type shells	6 1/2	—6 1/2
Lino. and stereo. dross	2 1/2	—2 1/2
Electro dross	1 1/2	—2



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IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.												
STEEL PRICES		BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP					
		Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
EAST	Bethlehem, Pa.			\$119.00 B3		5.325 B3	7.80 B3	5.325 B3						
	Buffalo, N. Y.	\$80.00 R3, B3	\$99.50 R3, B3	\$119.00 R3, B3	6.225 B3	5.325 B3	7.80 B3	5.325 B3	5.10 B3, R3	7.425 S10	7.575 B3			
	Phila., Pa.									7.975 P15				
	Harrison, N. J.													
	Conschocken, Pa.		\$104.50 A2	\$126.00 A2					5.15 A2	7.475 A2	7.575 A2			
	New Bedford, Mass.									7.875 R6				
	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		5.325 B3	7.80 B3							
	Boston, Mass.									7.975 T8				
	New Haven, Conn.									7.875 D1				
	Baltimore, Md.									7.425 T8				
	Phoenixville, Pa.					5.325 P2		5.325 P2						
	Sparrows Pt., Md.								5.10 B3		7.575 B3			
MIDDLE WEST	New Britain, Bridgeport, Wallingford, Conn.			\$119.00 N8						7.875 W1.S7				
	Pawtucket, R. I. Worcester, Mass.									7.975 N7, A5				
	Alton, Ill.								5.30 L1					
	Ashland, Ky.								5.10 A7		7.575 A7			
	Canton-Massillon, Dover, Ohio		\$102.00 R3	\$119.00 R3, T5						7.425 G4		10.75 G4		
	Chicago, Ill. Franklin Park, Ill. Evanston, Ill.	\$80.00 U1, R3	\$99.50 U1, R3,W8	\$119.00 U1, R3,W8	6.225 U1	5.275 U1, W8,P13	7.75 U1,Y1 W8	5.275 U1	5.10 W8, N4,A1	7.525 A1,T8 M8				
	Cleveland, Ohio									7.425 A5,J3		10.75 A5		
	Detroit, Mich.			\$119.00 R5					5.10 G3, M2	7.525 M2,D1, D2,G3,P11	7.575 G3	10.90 D2 10.85 G3		
	Anderson, Ind.									7.425 G4				
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	\$80.00 U1	\$99.50 U1	\$119.00 U1, Y1		5.275 U1, I3	7.75 U1, I3	5.275 I3	5.10 U1, I3,Y1	7.425 Y1	7.575 U1, I3,Y1	10.90 Y1		
	Sterling, Ill.	\$80.00 N4				5.275 N4			5.20 N4					
	Indianapolis, Ind.									7.575 J3				
	Newport, Ky.													
	Middletown, Ohio													
	Niles, Warren, Ohio Sharon, Pa.		\$99.50 S1, C10	\$119.00 S1, C10,S1					5.10 R3, S1	7.425 R3, T4,S1	7.575 R3, S1	10.80 S1 10.75 R3		
	Owensboro, Ky.	\$80.00 G5	\$99.50 G5	\$119.00 G5										
	Pittsburgh, Pa. Midland, Pa. Butler, Pa. Aliquippa, Pa.	\$80.00 U1, P6	\$99.50 U1, C11,P6	\$119.00 U1, C11,B7	6.225 U1	5.275 U1, J3	7.75 U1, J3	5.275 U1	5.10 P6	7.425 J3,B4				
	Weirton, Wheeling, Follansbee, W. Va.				6.225 W3	5.275 W3		5.275 W3	5.10 W3	7.425 W3,F3	7.575 W3	10.90 W3		
	Youngstown, Ohio	\$80.00 R3	\$99.50 Y1, C10	\$119.00 Y1			7.75 Y1			7.425 Y1,J3	7.575 U1, Y1	10.95 Y1		
WEST	Fontana, Cal.	\$90.50 K1	\$109.00 K1	\$140.00 K1		6.075 K1	8.55 K1	6.225 K1	5.85 K1	9.275 K1				
	Geneva, Utah		\$99.50 C7			5.275 C7	7.75 C7							
	Kansas City, Mo.					5.375 S2	7.85 S2							
	Los Angeles, Torrance, Cal.		\$109.00 B2	\$139.00 B2		5.975 C7, B2	8.45 B2		5.85 C7, B2	9.325 J3 9.475 C1				
	Minneapolis, Colo.					5.575 C6			6.20 C6	9.375 K1				
	Portland, Ore.					6.025 O2								
	San Francisco, Niles, Pittsburg, Cal.		\$109.00 B2			5.925 B2	8.40 B2		5.85 C7, B2					
	Seattle, Wash.		\$113.00 B2			6.025 B2	8.50 B2		6.10 B2					
	Atlanta, Ga.					5.475 A8			5.10 A8					
	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 T2	\$99.50 T2			5.275 T2, R3,C16	7.75 T2		5.10 T2, R3,C16		7.575 T2			
SOUTH	Houston, Lone Star, Texas		\$104.50 S2	\$124.00 S2		5.375 S2	7.85 S2							

(Effective Aug. 5, 1958)

STEEL
PRICES

SHEETS

WIRE
ROD

TINPLATE†

BLACK
PLATEHot rolled
18 ga.
& hvyr.Cold-
rolled

Galvanized

Enamel-
ingLong
TerneHi Str.
Low Alloy
H.R.Hi Str.
Low Alloy
C.R.Hi Str.
Low Alloy
Galv.Cokes*
1.25-lb.
base boxElectro*
0.25-lb.
base boxHolloware
Enameling
29 ga.

EAST

Bethlehem, Pa.

Buffalo, N. Y.

Claymont, Del.

Coatesville, Pa.

Conschocken, Pa.

Harrisburg, Pa.

Hartford, Conn.

Johnstown, Pa.

Fairless, Pa.

New Haven, Conn.

Phoenixville, Pa.

Sparrows Pt., Md.

Worcester, Mass.

Trenton, N. J.

MIDDLE WEST

Alton, Ill.

Ashland, Ky.

Canton-Massillon,
Dover, Ohio

Chicago, Joliet, Ill.

Sterling, Ill.

Cleveland, Ohio

Detroit, Mich.

Newport, Ky.

Gary, Ind. Harbor,
Indiana

Granite City, Ill.

Kokomo, Ind.

Mansfield, Ohio

Middletown, Ohio

Niles, Warren, Ohio

Sharon, Pa.

Pittsburgh, Pa.
Midland, Pa.
Butler, Pa.
Donora, Pa.
Aliquippa, Pa.

Portsmouth, Ohio

Weirton, Wheeling,
Follansbee, W. Va.

Youngstown, Ohio

WEST

Fontana, Cal.

Geneva, Utah

Kansas City, Mo.

Los Angeles,
Torrance, Cal.

Minneapolis, Colo.

San Francisco, Niles,
Pittsburgh, Cal.

Seattle, Wash.

SOUTH

Atlanta, Ga.

Fairfield, Ala.
Alabama City, Ala.

Houston, Tex.

† Special coated mfg.
terne deduct 50¢ from
1.25-lb. coke base box
price. Can-making quality
blackplate 55 to 128 lb.
deduct \$2.20 from 1.25 lb.
coke base box.
* COKES: 1.50-lb.
add 25¢.
ELECTRO: 0.50-lb. add
25¢; 0.75-lb. add 65¢;
1.00-lb. add \$1.00. Differ-
ential 1.00 lb. 0.25 lb.
add 65¢.

(Effective Aug. 5, 1958)

STEEL
PRICES

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mir's. Bright
EAST	Bethlehem, Pa.	5.675 R3.B3			6.725 B3	9.025 B3						
	Buffalo, N. Y.		5.675 R3.B3		6.725 B3.R3	9.025 B3.B5		5.10 B3		7.20 B3		8.00 W6
	Claymont, Del.							5.10 C4		7.20 C4	7.625 C4	
	Coatesville, Pa.							5.10 L4		7.20 L4	7.625 L4	
	Conshohocken, Pa.							5.10 A2	6.175 A2	7.20 A2	7.625 A2	
	Harrisburg, Pa.							5.10 P2	6.275 P2			
	Milton, Pa.	5.825 M7	5.825 M7									
	Hartford, Conn.			8.15 R3		9.325 R3						
	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3			5.10 B3		7.20 B3	7.625 B3	8.00 B3
	Fairless, Pa.	5.825 U1	5.825 U1		6.875 U1							
	Newark, N. J.					9.200 W10 9.200 P10						
	Bridgeport, Conn.				6.85 N8	9.175 N8						
	Putnam, Conn.											
	Willimantic, Conn.											
MIDDLE WEST	Sparrows Pt., Md.		5.675 B3					5.10 B3		7.20 B3	7.625 B3	8.10 B3
	Palmer, Worcester, Readville, Mass.					9.325 A5.B5						8.30 A5, W6
	Mansfield, Mass.											
	Spring City, Pa.					9.20 K4						
	Alton, Ill.	5.875 L1										8.20 L1
	Ashland, Newport, Ky.							5.10 A7.A1		7.20 A1		
	Canton, Massillon, Ohio	6.15* R3		7.65 R3.R2	6.725 R3.T5	9.025 R3.R2, T5						
	Chicago, Joliet, Waukegan, Ill. Harvey, Ill.	5.675 U1.R3, W8.N4.P13	5.675 U1.R3, N4.P13	7.65 A5, W10.W8, B5.L2.N9	6.725 U1.R3, W8	9.025 A5, W10.W8, L2.N8.B5		5.10 U1.A1, W8.J3	6.175 U1	7.20 U1.W8	7.625 U1.W8	8.00 A5.R3, W8.N4, K2.W7
	Cleveland, Ohio Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5.C13, C18		9.025 A5, C13.C18		5.20 R3.J3	6.175 J3		7.625 R3, J3	8.00 A5, C13
	Detroit, Mich.	5.775 G3	6.025 G3		6.725 R5.G3	9.025 R5, 9.225 B5.P3, P8		5.10 G3		7.20 G3	7.625 G3	
	Duluth, Minn.											8.00 A5
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1.J3, Y1	5.675 U1.J3, Y1	7.65 R3.J3	6.725 U1.J3, Y1	9.025 R3.M4		5.10 U1.J3, Y1	6.175 J3.J3	7.20 U1.Y1	7.625 U1, Y1.J3	8.10 M4
	Granite City, Ill.							5.20 G2				
	Kokomo, Ind.		5.775 C9									8.10 C9
WEST	Sterling, Ill.	5.775 N4	5.775 N4					5.10 N4				8.10 K2
	Niles, Warren, Ohio Sharon, Pa.			7.65 C10	6.725 C10.S1	9.025 C10		5.10 R3.S1		7.20 S1	7.625 R3, S1	
	Owensboro, Ky.	5.675 G5			6.725 G5							
	Pittsburgh, Midland, Denora, Aliquippa, Pa.	5.675 U1.J3	5.675 U1.J3	7.65 A5.B4, R3.J3.C11, W10.S9.C8	6.725 U1.J3, C11.B7	9.025 A5, W10.R3.S9, C11.C8		5.10 U1.J3	6.175 U1	7.20 U1.J3, B7	7.625 U1.J3, B7.C11	8.00 A5, J3.P6
	Portsmouth, Ohio											8.00 P7
	Weirton, Wheeling, Follansbee, W. Va.							5.10 W5				
	Youngstown, Ohio	5.675 U1.R3, Y1	5.675 U1.R3, Y1	7.65 A1.Y1, F2	6.725 U1.Y1	9.025 Y1.F2		5.10 U1.R3, Y1		7.20 Y1	7.625 U1, R3.Y1	8.00 Y1
	Emeryville, Cal.	6.425 J5	6.425 J5		7.775 K1			5.90 K1		8.00 K1	8.425 K1	
	Fontana, Cal.	6.375 K1	6.375 K1					5.10 C7			7.625 C7	
	Geneva, Utah											
	Kansas City, Mo.	5.925 S2	5.925 S2		6.975 S2							8.25 S2
	Los Angeles, Torrance, Cal.	6.375 C7.B2	6.375 C7.B2	9.10 R3.P14	7.775 B2	11.00 P14						8.95 B2
	Minnequa, Colo.	6.125 C6	6.125 C6					5.95 C6				8.25 S2
SOUTH	Portland, Ore.	6.425 O2	6.425 O2									
	San Francisco, Niles, Pittsburg, Cal.	6.375 C7	6.375 C7									8.95 C7.C6
	Pittsburg, Cal.	6.425 B2	6.425 B2									
	Seattle, Wash.	6.425 B2.N6	6.425 B2					6.00 B2		8.10 B2	8.525 B2	
	Atlanta, Ga.	5.875 A8	5.875 A8									8.00 A8
	Fairfield, Ala. City, Birmingham, Ala.	5.675 T2.R3, C16	5.675 T2.R3, C16	8.25 C16				5.10 T2.R3			7.625 T2	8.00 T2.R3
	Houston, Ft. Worth, Lone Star, Tex.	5.925 S2	5.925 S2		6.975 S2			5.20 S2		7.30 S2	7.725 S2	8.25 S2
								5.20 L3				

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1	Acme Steel Co., Chicago
A2	Alan Wood Steel Co., Conshohocken, Pa.
A3	Allegheny Ludlum Steel Corp., Pittsburgh
A4	American Cladmetals Co., Carnegie, Pa.
A5	American Steel & Wire Div., Cleveland
A6	Angel Nail & Chaplet Co., Cleveland
A7	Armco Steel Corp., Middletown, Ohio
A8	Atlantic Steel Co., Atlanta, Ga.
A9	Acme-Newport Steel Co., Newport, Ky.
B1	Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2	Bethlehem Pacific Coast Steel Corp., San Francisco
B3	Bethlehem Steel Co., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Bliss & Laughlin, Inc., Harvey, Ill.
B6	Brook Plant, Wickwire Spencer Steel Div., Birdsboro, Pa.
B7	A. M. Byers, Pittsburgh
B8	Braeburn Alloy Steel Corp., Braeburn, Pa.
C1	Calatrop Steel Corp., Los Angeles
C2	Carpenter Steel Co., Reading, Pa.
C3	Central Iron & Steel Co., Harrisburg, Pa.
C4	Claymont Products Dept., Claymont, Del.
C5	Colorado Fuel & Iron Corp., Denver
C6	Columbia Geneva Steel Div., San Francisco
C7	Columbia Steel & Shifting Co., Pittsburgh
C8	Continental Steel Corp., Kokomo, Ind.
C9	Copperweld Steel Co., Pittsburgh, Pa.
C10	Crucible Steel Co. of America, Pittsburgh
C11	Cuyahoga Steel & Wire Co., Cleveland
C12	Compressed Steel Shifting Co., Readville, Mass.
C13	G. O. Carlson, Inc., Thorndale, Pa.
C14	Connors Steel Div., Birmingham
C15	Chester Blast Furnace, Inc., Chester, Pa.
C16	Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
D1	Detroit Steel Corp., Detroit
D2	Dearborn Div., Sharon Steel Corp.
D3	Driver Harris Co., Harrison, N. J.
D4	Dickson Weatherproof Nail Co., Evanston, Ill.
E1	Eastern Stainless Steel Corp., Baltimore
E2	Empire Steel Co., Mansfield, O.
F1	Firth Sterling, Inc., McKeesport, Pa.
F2	Fitzsimons Steel Corp., Youngstown
F3	Follansbee Steel Corp., Follansbee, W. Va.
G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Corp., Detroit
G4	Greer Steel Co., Dover, O.
G5	Green River Steel Corp., Owenboro, Ky.
H1	Hanna Furnace Corp., Detroit
I2	Ingersoll Steel Div., Chicago
I3	Inland Steel Co., Chicago
I4	Interlake Iron Corp., Cleveland
J1	Jackson Iron & Steel Co., Jackson, O.
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Cal.
K2	Keystone Steel & Wire Co., Peoria
K3	Koppers Co., Granite City, Ill.
K4	Keystone Drawn Steel Co., Spring City, Pa.
L1	Laclede Steel Co., St. Louis
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
M1	Mahoning Valley Steel Co., Niles, O.
M2	McLouth Steel Corp., Detroit
M3	Mercer Tube & Mfg. Co., Sharon, Pa.
M4	Mid States Steel & Wire Co., Crawfordsville, Ind.
M6	Mystic Iron Works, Everett, Mass.
M7	Milton Steel Products Div., Milton, Pa.
M8	Mill Strip Products Co., Evanston, Ill.
N1	National Supply Co., Pittsburgh
N2	National Tube Div., Pittsburgh
N3	Niles Rolling Mill Div., Niles, O.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N6	Northwest Steel Rolling Mills, Seattle
N7	Newman Crosby Steel Co., Pawtucket, R. I.
N8	Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9	Nelson Steel & Wire Co.
O1	Oliver Iron & Steel Co., Pittsburgh
O2	Oregon Steel Mills, Portland
P1	Page Steel & Wire Div., Monessen, Pa.
P2	Phoenix Iron & Steel Co., Phoenixville, Pa.
P3	Pilgrim Drawn Steel Div., Plymouth, Mich.
P4	Pittsburgh Coke & Chemical Co., Pittsburgh
P5	Pittsburgh Screw & Bolt Co., Pittsburgh
P6	Pittsburgh Steel Co., Pittsburgh
P7	Portsmouth Div., Detroit Steel Corp., Detroit
P8	Plymouth Steel Co., Detroit
P9	Pacific States Steel Co., Niles, Cal.
P10	Precision Drawn Steel Co., Camden, N. J.
P11	Production Steel Strip Corp., Detroit
P13	Phoenix Mfg. Co., Joliet, Ill.
P14	Pacific Tube Co.
P15	Philadelphia Steel and Wire Corp.
R1	Reeves Steel & Mfg. Co., Dover, O.
R2	Reliance Div., Eaton Mfg. Co., Massillon, O.
R3	Republic Steel Corp., Cleveland
R4	Roebbing Sons Co., John A., Trenton, N. J.
R5	J. & L. Steel Co., Stainless Div.
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rome Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S2	Sheffield Steel Div., Kansas City
S3	Shenango Furnace Co., Pittsburgh
S4	Simonds Saw and Steel Co., Fitchburg, Mass.
S5	Sweet's Steel Co., Williamsport, Pa.
S6	Standard Forging Corp., Chicago
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S9	Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10	Seneca Steel Service, Buffalo
S11	Southern Electric Steel Co., Birmingham
T1	Tonawanda Iron Div., N. Tonawanda, N. Y.
T2	Tennessee Coal & Iron Div., Fairfield
T3	Tennessee Products & Chem. Corp., Nashville
T4	Thomas Strip Div., Warren, O.
T7	Timken Steel & Tube Div., Canton, O.
T8	Texas Steel Co., Fort Worth
T9	Thompson Wire Co., Boston
U1	United States Steel Corp., Pittsburgh
U2	Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3	Ulrich Stainless Steels, Wallingford, Conn.
U4	U. S. Pipe & Foundry Co., Birmingham
W1	Wallingford Steel Co., Wallingford, Conn.
W2	Washington Steel Corp., Washington, Pa.
W3	Weirton Steel Co., Weirton, W. Va.
W4	Wheatland Tube Co., Wheatland, Pa.
W5	Wheeling Steel Corp., Wheeling, W. Va.
W6	Wickwire Spencer Steel Div., Buffalo
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Div., S. Chicago, Ill.
W9	Woodward Iron Co., Woodward, Ala.
W10	Wyckoff Steel Co., Pittsburgh
W12	Wallace Barnes Steel Div., Bristol, Conn.
Y1	Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING

Base discounts (per) l.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD																SEAMLESS							
	1/2 in.		3/4 in.		1 in.		1 1/4 in.		1 1/2 in.		2 in.		2 1/2 in.		3 in.		3 1/2 in.		4 in.		4 1/2 in.		5 in.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																								
Sparrows Pt. B3	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50										
Youngstown R3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Fontana K1																								
Pittsburgh J3	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
Alton, Ill. L1	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50										
Sharon M1	0.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Fairless N2	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50										
Pittsburgh N1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
Wheeling W5	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Wheatland W4	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50										
Youngstown Y1	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
Indiana Harbor Y1	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50										
Lorain N2	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50		
EXTRA STRONG PLAIN ENDS																								
Sparrows Pt. B3	4.75	*9.0	8.75	*5.0	11.75	*8.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50										
Youngstown R3	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50										
Fairless N2	4.75	*9.0	8.75	*5.0	11.75	*8.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50										
Fontana K1																								
Pittsburgh J3	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		
Alton, Ill. L1	4.75	*9.0	8.75	*5.0	11.75	*8.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50										
Sharon M1	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50										
Pittsburgh N1	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		
Wheeling W5	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50										
Wheatland W4	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50										
Youngstown Y1	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		
Indiana Harbor Y1	5.75	*8.0	9.75	*4.0	12.75	*0.50	13.25	*0.75	13.75	*0.25	14.25	*0.75	14.75	*0.50										
Lorain N2	6.75	*7.0	10.75	*3.0	13.75	*1.50	14.25	*0.25	14.75	*1.25	15.25	*1.75	15.75	*0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50		

Threads only, butt weld and seamless 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 5 1/2 pt. higher discount. Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2 1/2 and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 10¢ per lb.

(Effective Aug. 5, 1958)

METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots for minus 100 mesh

Swedish sponge iron, del. East of Miss. River, ocean bags, 23,000 lb. and over	10.5¢
F.O.B. Riverton or Camden, New Jersey, west of Miss. River	9.5¢
Domestic sponge iron, 98+ % Fe, 23,000 lb. and over del'd East of Miss. River	10.5¢
F.O.B. Riverton, New Jersey, West of Miss. River	9.5¢
Canadian sponge iron, del'd in East, carloads	10.5¢
Atomized iron powder, 98% + Fe, 40 mesh, F.O.B. Easton, Pa., in 100 lb bags	7.7¢
Atomized iron powder, 98% + Fe, F.O.B. Easton, Pa., in 100 lb. bags. Freight allowed east of Miss. River	10.5¢
Atomized iron powder, 98% + Fe. Cutting and scaring grade, F.O.B. Easton, Pa.	8.5¢
Electrolytic iron, annealed, imported 99.5+ % Fe	27.5¢
domestic 99.5+ % Fe	36.5¢
Electrolytic iron, unannealed minus 325 mesh, 99+ % Fe	57.0¢
Electrolytic iron melting stock, 99.84% pure	27.0¢
Carbonyl iron, size 3 to 20 micron, 98%, 99.8+ % Fe. \$8.0¢ to \$2.85 Aluminum, freight allowed	38.00¢
Brass, 10 ton lots	31.1¢ to 47.1¢
Copper, electrolytic	41.50¢
Copper, reduced	40.3¢ to 48.8¢
Cadmium, 100-199 lb. 95¢ plus metal value	
Chromium, electrolytic, 99.85% min. Fe. 03 max. Del'd	\$5.00
Lead, f.o.b. Hammond, Ind.	19¢
Manganese f.o.b. Extron, Pa.	46.0¢
Molybdenum, 99%	\$3.60 to \$3.95
Nickel, chemically precipitated	\$1.05
Nickel, unannealed	\$1.00
Nickel, annealed	\$1.06
Nickel, spherical, unannealed #80	\$1.13
Silicon	43.50¢
Solder powder	13¢ plus met. value
Stainless steel, 302	\$1.02
Stainless steel, 316	\$1.30
Tin	14.00¢ plus metal value
Tungsten, 99% (65 mesh) \$3.15 (nominal)	
Zinc, 5000 lb & over	17.5¢ to 30.7¢

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)
Pct. Discounts

Machine and Carriage Bolts	Full Container Price	20 Containers	20,000 Lb.	40,000 Lb.
1/2" and smaller x 6" and shorter	40	54	56	57
3/4" thru 1" x longer than 6"	35	40	43	46
Roll thread carriage bolts 1/2" & smaller x 6" and shorter	40	54	56	57
Lag, all diam. x 6" & shorter	40	54	56	57
Lag, all diam. longer than 6 in.	35	44 1/2	47	48 1/2
Flow bolts, 1/2" & smaller x 6" and shorter	40	54	56	57

(Add 25 pct for broken case quantities)

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
1/2" in. or smaller	60 1/2
3/4" in. to 1 in. inclusive	58 1/2
1 1/4" in. to 1 1/2 in. inclusive	58 1/2
1 1/2" in. and larger	58 1/2

C. P. Hex, reg. & hvy.	
1/2" in. or smaller	60 1/2
3/4" in. to 1 1/2 in. inclusive	58 1/2
1 1/2" in. and larger	53 1/2

Hot Galv. Hex Nuts (All Types)	
1/2" in. and smaller	46 1/2

Semi-finished Hex Nuts	
1/2" in. or smaller	60 1/2
3/4" in. to 1 1/2 in. inclusive	58 1/2
1 1/2" in. and larger	53 1/2

(Add 25 pct for broken case or keg quantities)

Finished	
1/2" in. and smaller	63

Rivets	Base per 100 lb
1/2" in. and larger	\$12.25
7/16 in. and smaller	19

Cap Screws

Discount (Packages)
Full Finished H. C. Heat Treat

New std. hex head, pack-aged		
1/2" diam. and smaller x 6" and shorter	40	26
3/4" and shorter	22	3
1/2" diam. and smaller x longer than 6"	8	+13
3/4", 1", and 1 1/2" diam. x longer than 6"	6	+32
	C-1018 Steel Full-Finished Carbons Bulk	

1/4" through 1/2" dia. x 6" and shorter	58	49
3/4" through 1" dia. x 6" and shorter	45	33
Minimum quantity—1/4" through 1/2" diam., 15,000 pieces; 1/16" through 3/4" diam., 5,000 pieces; 3/4" through 1" diam., 2,000 pieces.		

Machine Screws & Stove Bolts

Plain Finish	Discount	Mach. Stove
Cartons		Screws Bolts
Bulk	Quantity	60 60

To 1/4" diam. incl.	25,000-and over	60	..
5/16 to 3/8" diam. incl.	15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

In Cartons	Discount	Hex Square
Quantity		16 19

In Bulk		
1/2" diam. & smaller	25,000 and over	14 16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Roller elliptical, 18 in. or longer, 5000 lb lots	40.00
Electrodeposited	32.75
Brass, 80-20, ball anodes, 2000 lb or more	45.50
Zinc, ball anodes, 2000 lb lots	16.50
(for elliptical, add 1¢ per lb)	
Nickel, 99 pct plus, rolled carbon, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.55
Tin, ball anodes \$1.13 per lb (approx.).	

Chemicals

Copper cyanide, 100 lb drum	68.70
Copper sulphate, 100 lb bags, per cwt.	22.15
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 300 lb	42.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	24.05
(Philadelphia price \$4.50)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum	138.7
N. Y.	48.00
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.7
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

WARE-HOUSES

Metropolitan Price, dollars per 100 lb.

WARE-HOUSES		Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
City	City Delivery Charge	Hot-Rolled (16 ga. & hvy.)	Cold-Rolled (15 gage)	Galvanized (16 gage)†	Hot-Rolled		Standard Structures	Hot-Rolled (merchant)	Cold-Finished	Hot-Rolled 4815 As rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 4613 As rolled	Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.64	8.97	9.05	9.01	10.68				
Baltimore	\$ 10	8.10	9.00	9.78	8.80	8.76	8.60	8.75	12.43	16.28	15.28	19.83	19.08
Birmingham		8.18	9.45	10.46	8.23	8.56	8.64	8.60	10.56				
Boston	10	9.48	10.54	11.55	9.52	9.82	9.73	9.83	13.28	16.38	15.38	19.93	19.18
Buffalo	15	8.40	9.15	11.22	8.65	9.05	9.05	8.95	11.15	16.34	15.15	19.01	18.95
Chicago	15	8.35	9.60	10.25	8.38	8.71	8.79	8.75	8.95	15.80	14.80	19.35	18.60
Cincinnati	15	8.49	9.65	10.25	8.60	9.08	9.33	9.07	9.46	15.61	15.11	18.96	18.91
Cleveland	15	8.33	9.60	10.35	8.48	8.94	9.16	8.84	11.95	15.89	14.89	19.29	18.69
Denver	20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				28.84
Detroit	15	8.58	9.85	10.60	8.73	9.06	9.33	9.05	9.30	15.46	15.06	18.81	18.86
Houston		7.10	8.40		7.25	7.70	7.25	7.20	11.10	16.20	15.25	19.65	18.95
Kansas City	20	9.02	10.27	10.82	9.05	9.38	9.46	9.42	9.87	20.02	15.47	20.02	19.27
Los Angeles		8.25	10.20	12.10	8.00	8.05	8.70	8.75	12.10	17.05	16.10	21.05	20.35
Memphis	15	8.55	9.80		8.60	8.93	9.01	8.97	12.11				
Milwaukee	15	8.48	9.73	10.38	8.51	8.84	9.00	8.88	9.18	15.93	14.93	19.48	18.73
New York	10	8.97	10.23	10.66	9.41	9.53	9.45	9.67	13.31	16.19	15.19	19.74	18.99
Norfolk	20	8.20			8.90	8.65	9.20	8.90	10.70				
Philadelphia	10	8.10	9.00	10.02	8.79	8.87	8.60	8.75	11.61	16.11	15.11	19.66	18.91
Pittsburgh	15	8.33	9.60	10.60	8.48	8.71	8.79	8.75	10.95	15.80	14.80	19.35	18.60
Portland		10.00	11.75	13.30	11.95	11.50	11.10	9.85	16.00	18.50	17.45	20.75	20.25
San Francisco	10	9.45	10.85	11.10	9.55	9.70	9.60	9.80	13.10	17.05	16.10	21.05	20.35
Seattle		9.95	11.15	12.20	10.00	9.70	9.80	10.10	14.05	17.15	16.35	20.65	20.15
Spokane	15	10.10	11.30	12.15	10.15	9.85	9.95	10.25	14.20	17.35	16.35	21.55	21.05
St. Louis	15	8.69	9.94	10.61	8.74	9.00	9.25	9.12	9.56	16.16	15.16	19.71	18.96
St. Paul	15	8.94	10.19	10.86	8.99	9.45	9.53	9.37	9.81		15.41		19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. **All sizes except 18 and 16 gage.
†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. † 10 ga. x 96" x 120"; ‡ 20 ga. x 96" x 120"; § 26 ga. x 30" x 96"; ¶ 4 1/2" x 1" in lots of 1000 to 9999; ** sheared plate 1/4" x 84" in lots of 1000 to 9999; * 3" x 5.70" in lots of 1000 to 9999; † M-1020—1-in. rounds in lots of 1000 to 9999.

(Effective Aug. 4, 1958)

TOOL STEEL

F.o.b. mill	W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	—	\$1.795	T-1
18	4	1	—	—	5	2.50	T-4
18	4	2	—	—	—	1.96	T-2
1.5	4	1.5	8	—	—	1.155	M-1
6	4	3	—	—	—	1.545	M-3
6	4	2	—	—	—	1.30	M-2
High-carbon chromium..	—	—	—	—	—	.925	D-3, D-5
Oil hardened manganese	—	—	—	—	—	.475	O-2
Special carbon	—	—	—	—	—	.36	W-1
Extra carbon	—	—	—	—	—	.36	W-1
Regular carbon	—	—	—	—	—	.305	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb. higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb. Lb.

Cladding	Plate (A3, J2, L4, C4)			Sheet (J2)
	10 pct	15 pct	20 pct	
302				37.50
304	37.95	42.25	46.70	40.00
316	44.40	49.50	54.50	58.75
321	40.05	44.60	49.30	47.25
347	42.40	47.55	52.80	57.00
405	29.85	33.35	36.85	
410	29.55	33.10	36.70	
430	29.80	33.55	37.25	

CR Strip (S9) Copper, 10 pct, 2 sides, 38.75; 1 side, 33.10.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Unthreaded
Bessemer U/I	5.525	6.50	6.975				14.75
Cleveland R3				9.75			
Chicago R3	5.525	6.50					
Ensley T2				9.75			6.60
Fairfield T2							6.60
Gary U/I	5.525	6.50					
Huntington C6				6.975			
Ind. Harbor F5	5.525	6.50	6.975	9.75			6.60
Ind. Harbor V/I							9.75
Johnstown B3				6.50			
Juliet U/I				6.975			
Kansas City S2				9.75			14.75
Lackawanna B1	5.525	6.50	6.975				6.60
Lebanon B1				6.975	14.50		14.75
Minneapolis C6	5.525	7.00	6.975	9.75			6.60
Pittsburgh P5							14.75
Pittsburgh J3				9.75			
Seattle B2				10.25			6.75
Steelton B1	5.525		6.975				15.75
Struthers V/I				9.75			6.75
Torrance C7							6.75
Williamport S5		6.50					
Youngstown R3				9.75			

COKE

Furnace, beehive (f.o.b.) Net-Ton
Connellsville, Pa. \$15.00 to \$15.75
Foundry, beehive (f.o.b.) \$17.50 to \$19.00

Foundry oven coke

Buffalo, del'd	\$31.75
Detroit, f.o.b.	30.50
New England, del'd	31.55
Kearney, N. J., f.o.b.	29.75
Philadelphia, f.o.b.	29.50
Swedeland, Pa., f.o.b.	29.50
Painesville, Ohio, f.o.b.	30.50
Erie, Pa., f.o.b.	30.50
Cleveland, del'd	32.65
Cincinnati, del'd	31.84
St. Paul, f.o.b.	29.75
St. Louis, f.o.b.	31.50
Birmingham, f.o.b.	28.85
Milwaukee, f.o.b.	30.50
Neville, Is., Pa.	29.25

LAKE SUPERIOR ORES

51.50% Fe natural content, delivered lower Lake ports. Prices for 1958 season. Freight changes for seller's account.

Gross Ton	
Openhearth lump	\$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	13.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths) ^a	Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed
Field			
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor		12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
Grain Oriented			
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harbor (J3); Mansfield (E2); Newport, Ky. (A9); Niles, O. (N3); Vandergrift (U1); Warren, O. (R3); Zanesville, Butler (A7).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE			CARBON*		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
24	84	26.00	40	100, 110	10.70
20	72	25.25	35	110	10.70
18	72	25.75	30	110	10.85
14	72	25.75	24	72 to 84	11.25
12	72	26.25	20	90	11.00
10	60	28.00	17	72	11.40
10	48	28.50	14	72	11.85
7	60	28.25	12	60	12.95
6	60	31.50	10	60	13.00
4	40	35.00	8	60	13.30
3	40	37.00			
2½	30	39.25			
2	24	60.75			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000
First quality, Ill., Ky., Md., Mo., Ohio, Pa.
(except Salina, Pa., add \$5.00) \$135.00
No. 1 Ohio 120.00
Sec. Quality, Pa., Md., Ky., Mo., Ill. 120.00
No. 2 Ohio 103.00
Ground fire clay, net ton, bulk
(except Salina, Pa., add \$2.00) 21.50

Silica Brick

Mt. Union, Pa., Ensley, Ala. \$150.00
Childs, Hays, Pa. 155.00
Chicago District 160.00
Western Utah 175.00
California 180.00
Super Duty
Hays, Pa. Athens, Tex., Wind-
ham, Warren, O., Morrisville
157.00-160.00

Silica cement, net ton, bulk, Latrobe 28.50
Silica cement, net ton, bulk, Chi-
cago 25.50
Silica cement, net ton, bulk, Ens-
ley, Ala. 26.50
Silica cement, net ton, bulk, Mt.
Union 24.50
Silica cement, net ton, bulk, Utah
and Calif. 37.00

Chrome Brick

Standard chemically bonded, Balt. \$105.00
Standard chemically bonded, Curt-
ner, Calif. 115.00
Burned, Balt. 99.00

Magnesite Brick

Standard Baltimore \$131.00
Chemically bonded, Baltimore 116.00

Grain Magnesite

St. % to ¼-in. grains
Domestic, f.o.b. Baltimore in bulk \$73.00
Domestic, f.o.b. Chewahall, Wash.,
Luning, Nev. 46.00
In sacks 52.00-54.00

Dead Burned Dolomite

Per net ton
F.o.b. bulk, producing points in:
Pa., W. Va., Ohio \$16.75
Midwest 17.00
Missouri Valley 15.00

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Cal	Standard Q Coated Nails				Cal	Galv.	Galv.	Galv.	Galv.
		Woven Fence	1/2" Fence Posts	Single Loop Barb Ties	Galv. Barb and Twisted Barbless Wire					
Alabama City R3	173	187		212	193	8.65	9.20			
Aliquippa J3***	173	190				8.68	9.325			
Atlanta A6**	173	192		214	198	8.75	9.425			
Bartonsville K2**	173	192	178	214	198	8.75	9.425**			
Buffalo W6						8.65	8.95*			
Chicago N4***	173	190	172	212	196	8.65	9.325			
Cleveland A6						8.65				
Cleveland A5						8.75	9.425			
Crawf'dav. M6**	173	192		214	198	8.65	9.20			
Donora, Pa. A5	173	187		212	193	8.65	9.20			
Fairfield, Ala. T2	173	187		212	193	8.65	9.20			
Galveston D4	9.101									
Houston S2	178	192		217	198	8.90	9.45			
Jacksonville M4	184	197		219	203	9.00	9.675			
Johnstown B3**	173	190	172	212	193	8.65	9.20			
Juliet, Ill. A5	173	187		212	193	8.65	9.20			
Kokomo C9*	173	188		214	195*	8.75	9.30*			
L. Angeles B2**	178	192		217	198*	9.60	10.275			
Kansas City S2*	178	192		217	198*	8.90	9.45*			
Minneapolis C61	178	192	177	217	198*	8.90	9.45*			
Monessen P6						8.95	9.50*			
Palmer, Mass. W6						8.60	10.15			
Pittsburg, Cal. C7	192	210		213		8.65	9.20			
Roskin, Pa. A5	173	187		212	193	8.65	9.20			
So. Chicago R3	173	187		212	193	8.65	9.20			
S. San Fran. C6†			236			9.60	10.15†			
Sparrows Pt. B3**	175			214	198	8.75	9.425			
Sterling, Ill. N6***	175	192	172	214	198	8.75	9.425			
Struthers, O. Y1*						8.65	9.20			
Worcester A5	179					8.25	9.50			
Williamport S5										

* Zinc less than .10%.

** 11-12% zinc.

*** 10% zinc.

† Plus zinc extras.

‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Baltimore, Md. T8	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. W12		10.70	12.90	16.10	19.30
Boston T8	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. R7	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. S9	8.95	10.40	12.60	15.60	18.55
Cleveland A5	8.95	10.40	12.60	15.60	18.55
Dearborn S1	9.05	10.50	12.70		
Detroit D1	9.05	10.50	12.70	15.70	
Detroit D2	9.05	10.50	12.70		
Dover, O. G4	8.95	10.40	12.60	15.60	18.55
Evansville, Ill. M8	9.05	10.40	12.60		
Franklin Park, Ill. T8	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. C11		12.90	16.10	19.30	
Indianapolis J3	9.10	10.55	12.60	15.60	18.55
Los Angeles C7	11.15	12.60	14.50	17.80	
New Britain, Conn. S7	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. B4	8.95	10.40	12.60	15.60	
New Haven, Conn. D7	9.40	10.70	12.90	15.90	
Pawtucket, R. I. N7	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. A1	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. S1	8.95	10.40	12.60	15.60	18.55
Trenton R4		10.70	12.90	16.10	19.30
Wallingford W1	9.40	10.70	12.90	15.90	18.55
Warren, Ohio T4	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. A5	9.50	10.70	12.90	15.90	18.85
Youngstown J3	8.95	10.40	12.60	15.60	18.55

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld
	OD- in.	B.W. Ga.	H.R.	C.D.		H.R.
Babcock & Wilcox	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
National Tube	2	13	36.34	42.56	35.22
	2½	12	48.94	57.31	47.43
	3	12	56.51	66.18	54.77
	3½	11	65.97	77.25	63.93
	4	10	87.61	102.59	85.53
Pittsburgh Steel	2	13	36.34	42.56	.....
	2½	12	48.94	57.31	.....
	3	12	56.51	66.18	.....
	3½	11	65.97	77.25	.....
	4	10	87.61	102.59	.....

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Beas.	Low Phos.
Birdsboro, Pa. B6	68.00	68.50	69.00	69.50	.....
Birmingham R3	62.00	62.50*	66.50	.....	.....
Birmingham W9	62.00	62.50*	66.50	.....	.....
Birmingham U4	62.00	62.50*	66.50	.....	.....
Buffalo R3	66.00	66.50	67.00	67.50	.....
Buffalo H1	66.00	66.50	67.00	67.50	.....
Buffalo W6	66.00	66.50	67.00	67.50	.....
Chester P2	66.50	67.00	67.50	.....	.....
Chicago I4	66.00	66.50	66.50	67.00	.....
Cleveland A5	66.00	66.50	66.50	67.00	71.00†
Cleveland R3	66.00	66.50	66.50	67.00	.....
DuPont I4	66.00	66.50	66.50	67.00	71.00†
Erie I4	66.00	66.50	66.50	67.00	71.00†
Everett M6	67.50	68.00	68.50	.....	.....
Fontana K1	75.00	75.50	.....	.....	.....
Geneva, Utah C7	66.00	66.50	.....	.....	.....
Granite City G2	67.90	68.40	68.90	.....	.....
Hubbard Y1	66.00	66.50	.....	.....	.....
Ironton, Utah C7	66.00	66.50	.....	.....	.....
Midland C11	66.00	.....	.....	.....	.....
Minnequa C6	68.00	68.50	69.00	.....	.....
Monacaen P6	66.00	.....	.....	.....	.....
Neville Is. P4	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda T1	66.50	67.00	67.50	.....	.....
Sharpville S1	66.00	66.50	67.00	67.50	.....
So. Chicago R3	66.00	66.50	66.50	67.00	.....
So. Chicago W8	66.00	66.50	66.50	67.00	.....
Swedeland A2	68.00	68.50	69.00	69.50	.....
Toledo I4	66.00	66.50	66.50	67.00	.....
Troy, N. Y. R3	68.00	68.50	69.00	69.50	74.00
Youngstown Y1	.....	66.50	67.00	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, 32¢ per ton for 0.50 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phos.

Silvery iron: Buffalo (6 pct), H1, \$79.25; Jackson J1, I4 (Globe Div.), \$78.00; Niagara Falls (15.01-15.50), \$101.00; Keokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50. Add \$1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under 10 pct phos.): \$64.00. Add \$1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.00	23.75	23.25	25.25	—	27.00	39.75	32.25	37.00	—	16.75	—	17.00
Slabs, billets	27.00	27.00	28.00	31.50	32.00	33.25	49.50	40.00	46.50	—	21.50	—	21.75
Billets, forging	—	36.50	37.25	38.00	41.00	40.50	62.25	47.00	55.75	32.00	28.25	28.75	28.75
Bars, struct.	42.00	43.00	44.25	45.00	48.00	47.75	73.00	55.50	64.75	37.75	33.75	34.25	34.25
Plates	44.25	45.00	46.25	47.25	50.00	50.75	76.75	59.75	69.75	40.25	35.00	36.75	36.00
Sheets	48.50	49.25	51.25	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	—	55.00	80.75	65.50	79.25	48.25	40.25	—	40.75
Wire CF; Rod HR	40.00	40.75	42.00	42.75	45.50	45.25	69.25	52.50	61.50	35.75	32.00	32.50	32.50

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., U1; Washington, Pa., W2, J2; Baltimore, El; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Detroit, M2.

Strip: Midland, Pa., C11; Waukegan, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leeburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, J3; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1 (25¢ per lb higher); New Bedford, Mass., R6; Gary, U1 (25¢ per lb higher).

Bar: Baltimore, A7; S. Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T3, R3; Ft. Wayne, I4; Detroit, R3; Gary, U1; Owensboro, Ky., G3; Bridgeport, Conn., N8.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monacaen, P1; Syracuse, C11; Bridgeville, U2.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatsville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., R5; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R3; Munhall, Pa., S. Chicago, U1; Owensboro, Ky., G3; Bridgeport, Conn., N8.

(Effective Aug. 4, 1958)



ELECTRIC FURNACE STEEL CASTINGS

CARBON • ALLOY • STAINLESS

"C" Steel Castings possess many qualities other than the strength of steel. They provide for more freedom and efficiency of design, better weight-strength ratio and greater fatigue resistance, i.e., longer life and less replacement. "C" Steel Castings

SAND OR SHELL MOLDED

are foundry engineered from pattern to finished casting. They require minimum machining and assembly costs. Perhaps you can utilize the advantages of "C" Steel Castings in your products to reduce costs and gain additional quality and buyers' appeal. Our engineering staff is at your service. Write, phone or call.

CRUCIBLE STEEL CASTING CO.
LANSDOWNE 1, PENNA.



Here's the finest hook-on
bucket you can get—with extra
BUCKET STAMINA
LOAD CAPACITY
DIGGING POWER

Foundries, steel mills, power plants — all acclaim this Hayward Electric Clam-Shell as the finest hook-on bucket obtainable. Handles extra large loads safely. Notable for giving many years' service with minimum maintenance. Interchangeable with your electric magnet. The Hayward Company, 50 Church St., New York 7, N. Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLES
Famous for performance since 1888

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, 30-1.00% max. Si			
0.02% C	41.00	0.50% C	38.00
0.05% C	39.00	1.00% C	37.75
0.10% C	38.50	1.50% C	37.50
0.20% C	38.25	2.00% C	37.25
4.00-4.50% C, 60-70% Cr, 1-2% Si	28.75		
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si	27.50		
0.025% C (Simplex)	36.75		
0.10% C, 52-57% Cr, 2.00% max Si	37.50		
7-8 1/4% max C, 50-55% Cr, 3-6% max Si	22.50		
7-8 1/4% max C, 50-55% Cr, 3% max Si	25.00		

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule. Add 5¢ for each additional 0.25% of N.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe	
0.10% max. C	\$1.31
0.50% max. C	1.31
9 to 11% C, 88-91% Cr, 0.75% Fe	1.40

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (1/8" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.	
Carloads	\$1.29
Ton lots	1.31
Less ton lots	1.33

Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.			
Price is sum of contained Cr and contained Si			
	Cr	Si	
Carloads, bulk	27.50	14.20	
Ton lots	32.75	15.65	
Less ton lots	34.35	17.30	

Calcium-Silicon

Per lb of alloy, lump, delivered, packed, 30-33% Cr, 60-65% Si, 3.00 max. Fe.	
Carloads	25.65
Ton lots	27.95
Less ton lots	29.45

Calcium-Manganese-Silicon

Cents per lb of alloy, lump, delivered, packed, 16-20% Ca, 14-18% Mn, 53-59% Si.	
Carloads	24.25
Ton lots	26.15
Less ton lots	27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe 1/2 in. x 12 mesh.	
Ton lots	21.15
Less ton lots	22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% Si, 8-11% Mn, packed.	
Carload lots	18.45
Ton lots	19.95
Less ton lots	21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.	
Carload packed	19.20
Ton lots to carload packed	21.15
Less ton lots	22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marquette, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.	
Briquets, delivered, 66 pct Mn:	
Carloads, bulk	14.80
Ton lots packed in bags	17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.			
Manganese	Silicon		
16 to 19%	3% max.	\$100.50	
19 to 21%	3% max.	102.50	
21 to 23%	3% max.	105.00	

Manganese Metal

2 in. x down, cents per pound of metal delivered.	
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.	
Carload, packed	45.75
Ton lots	47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.	
Carloads	34.00
Ton lots	36.00
250 to 1999 lb	38.00
Premium for Hydrogen-removed metal	0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn	
	25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, del'd Mn 85-90%.			
	Carloads	Ton	Less
		(Bulk)	
0.07% max. C, 0.06% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.	
Carloads bulk	12.80
Ton lots, packed	14.45
Briquet contract basis carloads, bulk, delivered, per lb of briquet	
Packed, pallets, 3000 lb up to carloads	15.10
	16.50

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$93.00.	
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Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.			
	Ton lots	Carloads, packed	Carloads, bulk
96.75% Si 1.25% Fe	24.20	22.90	
98% Si, 0.75% Fe	24.95	23.65	

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.	
Carloads, bulk	7.70
Ton lots, packed	10.50

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.			
50% Si	14.20	75% Si	16.40
65% Si	15.25	85% Si	18.10
	90% Si		19.50

Ferrovandium

50-55% V delivered, per pound, contained V, in any quantity.	
Openhearth	3.20
Crucible	3.30
High speed steel (Primos)	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.			
	Cast	Turnings	Distilled
Ton lots	\$2.05	\$2.35	\$3.75
100 to 1999 lb.	2.40	3.30	4.55

(Effective Aug. 4, 1958)

Alifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads, bulk	10.35¢
Ton lots	11.70¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo

	\$1.28
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Ferrocolumbium, 50-50%, 2 in. x D, delivered per pound contained Cb.

Ton lots	\$4.00
Less ton lots	4.05

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Sb plus Ta

	\$3.80
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Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.

	\$1.68
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Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$5.00 unitage, per gross ton

10 tons to less carload	\$120.00
	\$131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

	\$1.35
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Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti

Less ton lots	\$1.50
	\$1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton

	\$240.00
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Ferrotungsten, 1/4 x down packed, per pounds contained W, ton lots delivered

	\$2.15 (nominal)
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Molybde oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa.

	\$1.41
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Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.

Carload, bulk lump	18.50¢
Ton lots, packed lump	20.50¢
Less ton lots	21.00¢

Vanadium oxide, 86-89% V₂O₅ per pound contained V₂O₅

	\$1.38
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Zirconium, per lb of alloy 35-40% f.o.b. freight allowed, carloads, packed

	27.25¢
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12-15%, del'd lump, bulk-carloads

	9.25¢
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Boron Agents

Borasil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B

2000 lb carload	\$5.50
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Hortram, f.o.b. Niagara Falls. Ton lots per pound

	45¢
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Less ton lots, per pound

	50¢
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Corbortan, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.

Ton lots per pound	14.00¢
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Ferroboreon, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots.

F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up	
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10 to 14% B	.85
14 to 19% B	1.20
19% min. B	1.50

Grinnal, f.o.b. Cambridge, O., freight allowed, 100 lb and over No. 1

No. 79	\$1.05
	50¢

Manganese-Boron, 75.00% Mn, 15.20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.

Ton lots (packed)	\$1.46
Less ton lots (packed)	1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots

	2.15
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RAILWAY EQUIPMENT

FOR SALE

Used-As Is-Reconditioned

RAILWAY CARS

All Types

SERVICES TESTED
FREIGHT CAR REPAIR
PARTS

For All Types of Cars

LOCOMOTIVES

Diesel, Steam, Gasoline
Diesel-Electric

SPECIAL

STANDARD GAUGE CARS
COVERED HOPPER CARS
10-70 ton Capacity

ORE HOPPER CARS

440 Cubic Feet
40- and 50-Ton Capacity

SIDE DUMP CARS

3-Air-operated, Austin-Western
30-Cubic Yard

RAILWAY TANK CARS and STORAGE TANKS

6,000- 8,000- and 10,000-Gallon
Cleaned and Tested

CRANES

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IRON & STEEL PRODUCTS, INC.

General Office

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Chicago 33, Illinois

Phone: Mitchell 6-1212

New York Office

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New York 17, N. Y.

Phone: YUkon 4-4746

"ANYTHING containing IRON or STEEL"

REBUILT — GUARANTEED ELECTRICAL EQUIPMENT

SYNCHRONOUS MOTORS
3-Phase—60 Cycle

Qu.	HP	Make	P.F.	Volts	R.P.M.
1	1750	G.E.	100	2300	3600
1	1500	G.E.	80	4150/2400	900
1	1500	Whas.	80	2300	514
2 (new)	1450	Whas.	80	4100	450
1	930	G.E.	80	2290/440	300
1	700	El. Mch.	100	440	200
1	450	Whas.	100	2200	125
2	350	G.E.	100	2300	300
1	300	Whas.	80	2300	990
1	300	G.E.	80	2200/440	600

(5)—G.E. O.I.S.C. 2500 K.V.A. Transformers
3 phase, 60 cycle, 14400/13110 V. Prim.,
2300/4000-Y Sec. (Very late type.)
(Immediate Shipment from Seattle.)

SWITCHGEAR IN CUBICLES

Magnetically operated breakers
Draw-out Type

- (1)—Whas. 1200 Amp. Air Breaker, type 75 DH.,
7.2 K.V., 500 M.V.A., Int. cap.
- (5)—G.E. 1200 Amp. Air Breakers, type AM,
5 K.V., 100 M.V.A., Int. Cap.
- (1)—Whas. 600 Amp. O.C.B's, type B-26-A, 13.8
K.V., 250 M.V.A., Int. Cap.
- (3)—Whas. 600 Amp. O.C.B's, type F-100, 15 K.V.,
100 M.V.A., Int. Cap.
- (5)—G.E. 600 amp. O.C.B's, type FKR-225, 15
K.V. 150 M.V.A., Int. Cap.

OUTDOOR OIL CIRCUIT BREAKERS 3-Pole—Electrically Operated

Qu.	Amps.	KV	Make	Type	Int. Cap.
1	400	7.2	Whas.	G-11	500-MVA
1	600	60	G.E.	FK-329	500-MVA
1	600	37	G.E.	FHKO-236	500-MVA
1	600	34.5	Al.Cb.	FZO-50-34X	250-MVA
1	400	37	G.E.	FHKO-135	250-MVA
1	400	15	G.E.	FHKO-136	250-MVA
1	600	14.4	G.E.	FLO-14.4-4	210-MVA

T. B. MAC CABE COMPANY

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Cable Address

Phone

"Macsteel" Philadelphia, Pa.

Devonport 4-8300

THE CLEARING HOUSE

Rail Shop Closings Free Good Tools

Used machinery buyers welcome railroad shop equipment now coming on the market.

Usually the tools have only performed maintenance work and are in good condition.

■ The old adage about every cloud having a silver lining is proving true for plants seeking larger used machine tools. This time the cloud is the pall hanging over the railroad industry. The silver lining for many a plant is that large railroad tools from the steam engine era are being made available.

Well Cared For—In typical railroad fashion they have been well cared for and are in top condition. And they have generally seen only light duty for maintenance work.

"We have a beautiful 42 in. Bullard vertical turret lathe right now picked up from a southern railroad shop," says Paul Connell, Connell Machinery Co., Toledo, O.

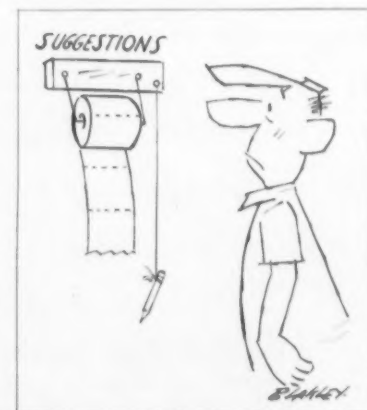
Worthwhile Buys — "Machines like this now sell new for over \$40,000 while this unit can be had for about \$16,500. Railroads are noted for their fine care of machinery and a lot of the units being put out now are like new, except maybe a little slower. They have not been in production use either, only for occasional maintenance work. These machines are a real break for the company that wants a good used machine."

Changing Needs — Underlying this disposal trend is another factor—a major switch in railroad repairs. The diesel engines, like automobiles, are relatively small, high

powered, complicated units. Maintenance has become a replacement business because it is cheaper to put in a new factory-built part than fix the old one. And the parts are pretty much off-the-shelf items rather than monster steam engine parts. So big parts are rarely handled and big tools are seldom needed.

Ohio Market Better—In Northwestern Ohio, used machinery sales have shown slow improvement through the summer months. Firms which are financially sound are upgrading their machinery through buying some good used equipment. At current depressed prices, the good equipment being offered is too attractive to pass up.

The southern part of the U. S. is still a fertile market for machine tools, too, since dealers there have not had a chance to develop into big operations. Once good relations are set up, in many cases customers will buy a machine sight unseen on the recommendation of a northern dealer.



CONSIDER GOOD USED EQUIPMENT FIRST

BENDING ROLLS

8" x 1/4" Bertsch Initial Type
12" x 5/16" Bertsch Initial Type
12" x 3/4" Hillis & Jones Pyramid Type
13" x 3/16" Bertsch Initial Type—NEW
32" x 3/4" Baldwin Pyramid Type

CRANES—OVERHEAD ELECTRIC TRAVELING

3 ton P&H 50' Span 220/3/60
5 ton Shepard Niles 70' Span 230 Volt D.C.
7 1/2 ton Shaw 40' Span 230 Volt D.C.
8 ton P&H 55' Span 220/3/60
10 ton P&H 58' Span 230 Volt D.C.
10 ton Milwaukee 57' Span 230 Volt D.C.
10 ton Shaw 48' Span 230 Volt D.C.
10 3/4 ton P&H 47' Span 230/3/60 A.C.
10 ton Shaw 120' Span 230 Volt D.C.
15 ton Northern 54' Span 230 Volt D.C.
15 ton Shepard Niles 56' Span 230 Volt D.C.
20 3/4 ton Whiting 47' Span 230/3/60 A.C.
120 ton Shepard Niles 77' Span 220/3/60

DRAW BENCHES

3000 lb. Draw Bench, 20 ft. Pull
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10	Shaw	67' 11"
10	Whiting	67' 11"
10	Calumet	59' 4"
5	Shaw (4)	72' 3"
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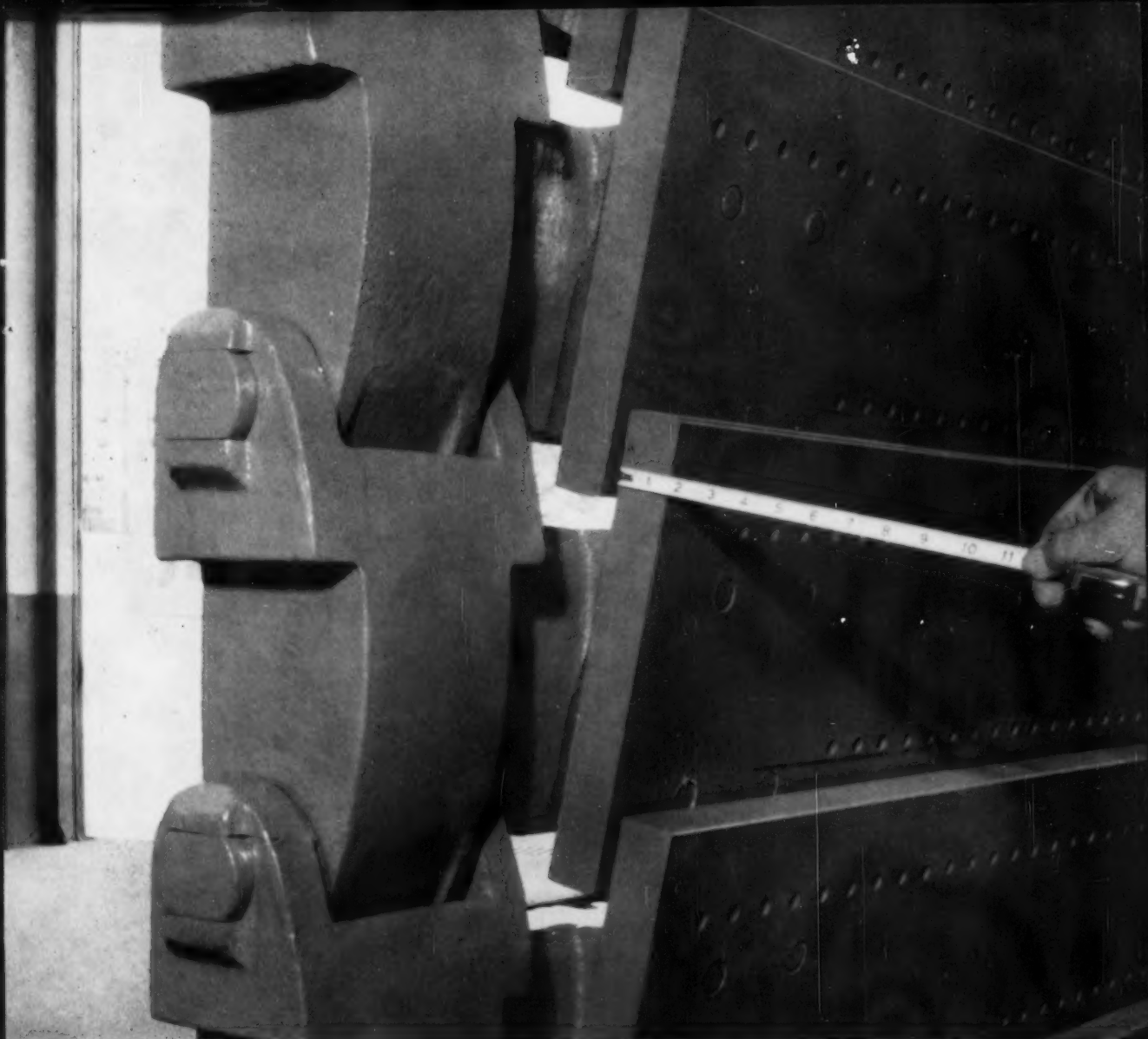
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